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This enforced coöperation between men of different training is a difficult matter, involving serious obligations upon both parties. The chief dangers which beset the layman are that, trusting to his legal acumen or business experience, he may fail to draw the line at problems beyond his ken, or may try to set off the opinion of one doctor against another; or that he may fail to distinguish between the value of advice tendered by medical men with general as opposed to special knowledge of the subject in hand. But there are even greater dangers in the path of the medical man called upon for advice; perhaps the greatest of all is that he may unwittingly pretend to knowledge that he does not really possess. When our lay colleagues turn to us for advice on administrative problems we sometimes give them as facts what are really no more than opinions; forgetting that we are dealing with persons who, not having had occasion to study such problems for themselves, may accept what we say not critically but literally. Then, when the progress of science leads us to recast our views, our lay colleagues, not unnaturally, regard us as very uncertain guides and may even revert to their own business experience as more likely to be of use. A witty Frenchman, discussing the question of the politician versus the professional soldier, is reported to have said, "La guerre est trop serieuse pour la laisser aux militaires." The general trend of medical opinion has so often proved wrong—as, for instance, in its early attitude towards Pasteur and Lister—that many would subscribe to the phrase "La santé est trop serieuse pour la laisser aux médecins." There is certainly some justification for such an epigram, yet its acceptance would be a national calamity. With each new discovery our profession becomes of more and more administrative importance. Every year the progress of medical science reduces the number of subjects with regard to which "opinions" have to do duty for facts. But in the sphere of tuberculosis, although so much is known, there still remains a vast field about which accurate knowledge is lacking, and yet as to which conflicting opinions are so tenaciously held by their exponents as to be almost creeds.

For this reason something in the nature of a "recessional" is wanted, a humble re-examination of the foundations of definite knowledge upon which tuberculosis schemes are or should be built; in order that we, as a profession, may speak with the force of unanimous conviction where this is justifiable, and may agree to qualify our opinions as tentative only where finality has not yet been reached.

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Let us first examine critically our knowledge as to the two fundamental factors that underlie tuberculosis—infection and resistance. What do we know about infection? We know the causative organism and how to cultivate it; we know many of its properties—vital, physical, and chemical, and we think that we know its varieties. But how many important details about its invasive mechanism still remain unknown! Fishberg, after a survey of the evidence relating to infection, is obliged to conclude that "there is no agreement among authorities as to the most common channel of entry of the tubercle bacilli before causing phthisis," and Römer is quoted by Fishberg as saying that "there is evidently some mode of transmission of this disease with which we are not as yet acquainted."

While these quotations serve to show how far from dogma are those who have spent their lives in the study of this disease, the fact remains that, apart from the question of the exact *mechanism* of infection, close contact with open cases is the outstanding source of danger to the healthy—a fact which no tuberculosis scheme in this country fails to recognise as of vital importance. There is, however, one aspect of the question which is too little considered and as to which more exact knowledge is urgently needed. To what extent does phthisis depend on reinfection from without?

This question, about which sharp differences of opinion exist, is of fundamental importance in administrative schemes. Was Hamburger right when, in 1912, he expressed the view that phthisis is an exacerbation of tuberculosis which was acquired during early childhood and remained latent for many years until some exciting cause or a reduction of the powers of resistance has brought about conditions favourable to its development? Or was Much correct in asserting that "a tuberculous organism is not susceptible to, in fact is immune against, superinfection from without?" There can be no doubt at all that, in these islands, the majority of those who after enjoying average health develop phthisis in middle or late adult life were already infected during childhood. The question is whether their phthisis is due to a reawakening of the old infection or to a fresh infection from without.

The importance of this question lies in its application to the prevention of the disease. If Hamburger and Much and those who think with them are right, it is clear that we may practically ignore the possibility of reinfection in adults and concentrate on obtaining for them such favourable conditions of life as will save them from a reduction in resistance. If, on the other hand, these careful observers are wrong, we may have to pay a great deal more attention than we do at present to the phthisic who, as the result of treatment provided by the State, is able to return to work as a clerk, a teacher, a butcher, a 'bus-conductor, or some such occupation.

REINFECTION FROM WITHOUT.

In support of the theory that reinfection from without is unimportant is the fact that physicians and nurses are not more liable than others to tuberculosis; that marital infection is infrequent; that, in armies in the field, from the ranks of which infective persons have been carefully excluded, the incidence of pulmonary tuberculosis continues much as in the industrial life of peace time; while fatigue, poverty, excesses, child-birth and overwork, factors that operate against physiological well-being or involve physiological stress, are found to be con-

stantly associated with a high phthisis mortality. Against this theory are the experimental findings in animals which prove that reinfection, though difficult, is possible, and that the immunity acquired through infection, though quite definite, is transitory. There is the fact, too, that although infection with the bovine bacillus is common in early life, it is hardly ever found in the phthisis of adults. The high incidence of the disease amongst clerks, domestic servants, and other persons liable to close contact with strangers who may be tuberculous, suggests that reinfection from without must frequently occur.

The evidence suggests that reinfection from without, though much more difficult than primary infection, is not only possible but frequent; that slight reinfections are readily overcome; but that repeated and massive reinfections are very serious, especially for those whose initial infections have been small, infrequent, and remote in point of time. But this is merely an expression of opinion, based on experiments and statistical data which, though suggestive, are not conclusive. Only successful research can give us the unanimity which is required if we are to tender advice of real utility on this subject.

VARIATIONS IN THE CLINICAL PICTURE.

Then, again, there is the question of the variations in symptomatology in the course of infection. With the same germ infecting the same species of host, it might be expected that the clinical picture would be fairly constant. As a matter of fact, in no disease is the clinical picture more diverse. It is certain, as pointed out by Krause, that some of the clinical variations are due to accidental factors, such as the location of tubercles close to large vessels or air passages; but it is equally certain that in every case the broad outlines of the clinical picture will depend upon the stability or instability of the balance between infection and resistance from day to day.

But what is the nutritional machinery that, inside these wide physiological variants, determines in any given case the state of the patient? There are physiological secrets behind the phenomena of nutrition which invite research, and the conquest of which may perhaps have great importance in treatment. The list of what we do not know about infection might be greatly prolonged, but as time is short I desire to pass on to some of the lacunæ in our knowledge about resistance.

PROBLEMS OF RESISTANCE.

It is common knowledge that the population of these islands presents marked individual variation in the power of resisting tuberculous infection. Some attribute this to differences in inherited susceptibility, others to variations in diet leading in certain areas and in certain strata of society to a food-deficiency favourable to tuberculous infection; while an increasing number of investigators tend to the view that the factor of most importance is variation in the degree of acquired resistance to the germ. While it is greatly to be desired that all these paths of investigation should be followed, there can be no reasonable doubt that civilised man owes to his powers of acquiring a relative immunity to the tubercle bacillus the steadily falling death-rate from tuberculosis which is such a marked feature of the recent history of human aggregations in Europe and elsewhere.

There is, however, one aspect of the question on which more definite knowledge is urgently wanted: The question whether the ingestion of milk infected with bovine tubercle bacilli plays a rôle in vaccinating us against human tubercle bacilli. Discussion of this question is often burked by the fear that expressions of medical opinion in favour of the theory of immunisation by infected milk may be exploited by interested persons to hinder progressive milk legislation. This seems an inadequate reason for avoiding a question of such vital importance. What evidence, if any, can be adduced in favour of this theory? It was proved 20 years ago by Von Behring and others that inoculation with living human tubercle bacilli could confer on calves a high degree of immunity to subsequent inoculation with a large dose of virulent bovine bacilli; and Calmette and Guérin proved that young calves could be immunised against the introduction of virulent bovine bacilli per os by previous feeding with appropriate quantities of human tubercle bacilli. It is therefore not unreasonable to surmise that the swallowing by children of milk containing living bovine bacilli confers on them some degree of resistance against human tuberculosis.

Since the only conclusive experiment is denied us, at least for the time being, we are obliged to seek for evidence of another kind: that provided by epidemiological investigations throughout the world. Here we find that it is universally true that where tuberculosis in cattle is absent or rare the inhabitants show a marked susceptibility to the human tubercle bacillus. This argument is not conclusive, because in just those same areas where bovine tuberculosis is rare, human infection, too, is uncommon, and so it may be that the immunisation due to minor infections with the human bacillus is wanting. Still, some of the instances that come to mind are very suggestive. Powell, for example, in a recent paper throws much light on the tuberculosis of India and the marked susceptibility to phthisis shown by the natives, and he definitely suggests that this is due in part to the absence of bovine infection which might serve to confer a relative immunity. In Africa similar observations have been made, and even in this country J. Brownlee has proved that the "young adult" type of mortality tends to coexist with a low percentage of infected milks. Finally, there is the vast natural experiment afforded by a community in which both bovine and human infections are common. Surely it only requires statistical research on a sufficiently comprehensive scale, and with sufficient regard to the reliability of the data collected for examination, to give us a final answer on this subject? The work of Riviere and of McNeil has already gone far to justify the conclusion that bovine infection does in fact protect; but the question is too important to allow of anything but a completely definite finding. Until this point is so completely cleared up that the medical profession accepts the conclusion with the same unanimity with which it accepts Koch's bacillus, we shall still be short of essential knowledge for the formulation of our tuberculosis schemes.

In conclusion, there remains the question, so vital to a colonial empire such as ours, of the epidemiology of tuberculosis amongst the inhabitants of isolated communities whence we draw recruits for our native regiments and for the industrial enterprises of our colonies and protectorates. We have at our disposal indisputable evidence of the extreme susceptibility of many of the races and tribes of our Dominions, but how much research can we quote as to the factors underlying this want of resistance? Surely it is worth while to invest large sums of money in the investigation of a problem which may mean life or death to tribesmen who look to us for security and protection, while we look to them for the personnel of our industrial developments throughout the Empire. The opportunity for this urgently needed research will soon pass with the increasing penetration of Europeans into the remote parts of Africa and elsewhere; but the knowledge to be gained might serve not only to direct preventive schemes abroad, but to widen the basis of our knowledge at home.

ROYAL SUSSEX COUNTY HOSPITAL.—Soon after the closing down of 125 beds on Oct. 1st last, owing to the difficulty in raising funds, a committee was appointed "to consider and advise as to obtaining fresh sources of income and increased economy of administration." Last year's income showed a deficiency of £7000 over expenditure. The committee invoked the assistance of Sir Napier Burnett, who last month spent considerable time at the institution. Sir Napier Burnett has submitted a long report to the committee, and the inquiries suggested by him are being pursued. The committee state that there is nothing in Sir Napier Burnett's report, whatever criticisms it may contain, which should deter the public from continuing and increasing the financial aid given to the hospital.

An Address

[ABRIDGED]

ON THE RELATIONSHIP OF MEDICINE AND TOXICOLOGY.

Presidential Address delivered before the Harveian Society of London, Jan. 11th, 1923,

BY SIR WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P. LOND.,
PHYSICIAN TO ST. MARY'S HOSPITAL.

[THE lecturer began by tracing the developments of medicine throughout the ages, associated with the work of the protagonists from Hippocrates down to Lister and Pasteur, showing the results of the application of chemical, physical, and biological researches to the elucidation of medical problems. And continued:—]

THE DEVELOPMENT OF TOXICOLOGY.

The recognition of the deleterious qualities of poisonous plants and of the bites of venomous reptiles must have been recognised by prehistoric man at a time long antedating the historical period. The earliest writings indicate that the ancient Egyptians and the Hindus were well acquainted with the use of poisons. A translation of an early Egyptian papyrus in the Louvre says, "Speak not of the name of Yao under the penalty of the Peach," from which it is to be inferred that the Egyptian priests were familiar with the preparations of hydrocyanic acid from peach leaves and kernels. Homer relates that Ulysses sought to obtain from Ephyra a poison with which to anoint his arrows, and the word toxicology owes its derivation from this use of poisons (τόξον, a bow). Xenophon, 410 B.C., relates that the use of poisons was so frequent amongst the Medes that it was an ancient custom for the cup-bearers to taste the wine before presenting it to the king. The "History of Plants," written by Theophrastus, 300 B.C., contains many references to the poisonous as well as the medicinal action of the vegetable poisons. Hemlock was used by the Greeks for the execution of criminals, and was the cause of the death of Socrates, 339 B.C.

The search for antidotes was probably coeval with the discovery of the deadly effects of poisons, and the antidote discovered by Mithridates in the first century B.C. may be mentioned. Criminal poisoning is referred to in Roman History in 331 B.C., when about 20 matrons were surprised in the act of preparing a poison which they were compelled by the magistrates to drink and from which they perished. Roman law, 82 B.C., contains a legislative enactment dealing with the crime of poisoning, and a later enactment dealt with the use of poisons to procure abortion. It is recorded that Agrippina and her son Nero made elaborate studies in experimental toxicology upon the human subject, and applied this knowledge to the removal of several noted personages by poison. During the next thousand years the use of poisons was practised, but no great developments in toxicological science took place. Numerous deaths by poison of emperors and ruling sovereigns are recorded.

With the Renaissance in Italy poisoning became a fine art. Political murder by poison was considered to be quite legitimate in Italy, as is evidenced by the secret archives of the Council of Ten at Venice A.D. 1400 to A.D. 1500. Pope Alexander VI. and his son Cæsar Borgia committed numerous murders by poison. At least five cardinals were poisoned between 1495 and 1503 to satisfy the rapacity of Pope Alexander VI., who himself fell a victim by poison in 1503, his butler giving him the poisoned wine intended for one of his victims. Poisoning in England was not unknown at this period, and in 1531 a statute of Henry VIII. ordered poisoners to be boiled to death. Up to the nineteenth century criminal poisoning was very common, and probably preparations of arsenic and corrosive sublimate were most commonly used.

The methods of detection of poison depended mainly upon the circumstances attending the administration. The post-mortem appearances in cases of poisoning appear to have been little understood, and importance was attached to signs such as lividity, incombustibility of the heart, &c., which we now know to be not in any way characteristic of death by poison. As in the case of medicine, toxicology did not make any really great advance until the development of modern chemistry and its application in the laboratory to the solution of the analytical problems with which toxicology is bound up. It has been truly said that the only certain sign of poisoning is the identification by analysis of the poison in the body.

Outstanding Events in the History of Toxicological Chemistry.

The following are outstanding events in the history of toxicological chemistry: The discovery of the Marsh test for aresenic in 1836. The detection of arsenic in the liver, spleen, kidneys, heart, and muscle of a case of suicidal arsenical poisoning in 1839 by Orfila showed that poisons should be sought for not only in the alimentary tract, but in other parts of the body. The importance of the absorption of poisons was thereby appreciated. In 1844 Fresenius and Von Babo devised a method for the systematic search of all mineral poisons and for the destruction of the organic matter of the viscera as a preliminary to the analysis. In 1850 Stas discovered a process by which alkaloidal poisons could be extracted from viscera, and this in a modified form is in use at the present day.

Notable Trials Illustrating the Advance of the Science.

A study of some of the notable poisoning trials during the past hundred years gives a very good illustration of the advances made in toxicological science and of the precision with which it can be proved beyond all possibility of doubt that death must have been caused by poison. The trial of Dr. Palmer in 1856 is of great interest; Palmer was convicted of poisoning his victim, Mr. Cook, by strychnine. Dr. Alfred Taylor, author of the well-known work on jurisprudence, attributed death to strychnine, and formed this opinion on the clinical symptoms preceding death. He was unable to prove from his analysis the presence of strychnine in the body, and attributed his failure to detect the poison to the imperfection of the methods of analysis at that time, showing that when he poisoned rabbits with strychnine he was not always able to demonstrate the presence of the poison by toxicological analysis. No less than 15 medical men gave evidence in this trial, seven of them for the defence. In spite of the great dispute concerning the toxicological evidence, Palmer was found guilty. The case is remarkable, since a conviction for poisoning by strychnine was obtained in spite of the absence of proof by the Crown of the presence of strychnine in the body of the deceased. At the present day the proof of a poison like strychnine in the dead body would probably be necessary for a conviction to be obtained of death from strychnine poisoning.

In the trial of Madeline Smith, 1857, who was condemned to death for poisoning her former lover by arsenic, there was an array of expert toxicological evidence, and Prof. F. Penny, of Glasgow, performed a masterly analytical investigation which for skilful care and thoroughness would be all that would be required for a similar trial of to-day.

The trial of Dr. Pritchard in Glasgow, 1865, is of great interest. I know of no case where there is such a combination of heartless cruelty and smug respectable hypocrisy. Dr. Pritchard was slowly poisoning his wife with tartar emetic while evincing the most affectionate solicitude for her sufferings, when his mother-in-law arrived to assist in the nursing. Her

efforts were rewarded by a combination of tartar emetic and tincture of aconite which proved fatal, and a few days later the unfortunate wife succumbed to the long course of tartar emetic which had caused untold suffering. The analytical investigations in this case were undertaken by Prof. F. Penny and Dr. Douglas Maclagan. They formed a masterly piece of work, carried out with care and skill which could not be surpassed to-day. This case is remarkable since aconitine was clearly proved to be present in the body of the first victim, and quantities of antimony beyond that of a possible fatal dose were demonstrated in both victims. The detection of aconitine at that time reflects the greatest credit on the scientific skill of the investigators.

The trial of Dr. Lamson, in 1882, was of interest, since the subtle poison aconitine, for which no definite chemical tests were known, was the cause of death. Sir Thomas Stevenson, by his masterly toxicological analysis, succeeded in extracting the poison from the viscera and proving its presence by physiological tests on himself and on mice. He gave incontestable proof that a poisonous dose had been taken, and Lamson was duly convicted of murdering his wife's nephew, Percy Malcolm John, aged 18, from whom he would have inherited through his wife a large sum of money.

The Maybrick trial aroused great interest in 1889. And here Sir Thomas Stevenson again performed a brilliant toxicological analysis. Mrs. Maybrick was convicted of poisoning her husband by the administration of arsenic. The interest of this case lies in the fact that the proof of fatal poisoning rested on the presence of $\frac{1}{3}$ gr. of arsenic in the liver, the minimum fatal dose being about 2 gr. The defence maintained that arsenic might lie in the liver in islands, not being uniformly distributed, and disputed the calculation by which, on the quantity found in a portion of the liver, the estimation of $\frac{1}{3}$ gr. for the whole liver was based.

The trial of H. H. Crippen, 1910, was of interest because this was the first case in which hyoscine had been used as a poison in a fatal criminal case. In this case the poison was extracted in spite of the burial of the viscera for six months, and the presence of hyoscine was clearly demonstrated by chemical tests and by its mydriatic action on the cat's eye.

The trial of the Seddons was of interest because in this case arsenic was found in all the organs of the victim, Miss Barrow, and a computation of the total amount of arsenic in the body was made by a determination of the arsenic present in each organ. The corpse was actually weighed for this purpose, as well as the individual organs. A fatal poisonous dose of 2 gr. was proved to be present in the body. For the purpose of this analysis the electrolytic Marsh-Berzelius test was used for the first time in determining quantitatively the amount of arsenic in each organ.

The Black case, 1922, was a very interesting case of arsenical poisoning. Although arsenic was present in appreciable amount in all the organs, the total amount found in them was considerably less than a possible fatal dose. The explanation of the small amount of poison in the body was clearly shown by the clinical history. The case was one of delayed arsenical poisoning, a considerable proportion of the arsenic having been got rid of by excretion in the few days which elapsed between the administration of the poison and the time of death.

The Armstrong case was a clear case of acute arsenical poisoning. The interest of this case lies in the fact that arsenic would have never been suspected as the cause of death in Mrs. Armstrong, who had died about a year previously, unless Major Armstrong had attempted to poison his rival solicitor, Mr. Martin, by arsenic. The discovery of arsenic as the cause of Mr. Martin's illness was made by the analysis of Mr. John Webster of the urine passed by Mr. Martin three days after the poison had been taken. The advantage of toxicological research is here beautifully illustrated, for the knowledge of the rate at which arsenic is excreted after a possible fatal dose has been taken enabled the deduction to be made that Mr. Martin must have been given a fatal dose of arsenic.

The Armstrong case and the Black case both illustrate the effect of imitation in the causation of criminal poisoning. It cannot be doubted that the sensational reports of a noted case of arsenical poisoning (the Greenwood case) led to the selection and use of this poison in these two cases. I will conclude by giving a brief account of a case of arsenical poisoning which came to my notice a few days ago.

A Government official in a tropical country consulted me on account of an illness which had given rise to much difficulty of diagnosis. On Oct. 6th, 1922, he was attacked with severe abdominal pain, vomiting, and diarrhœa, watery stools containing some mucus being passed. He was very ill with these symptoms for three days and a good deal of hiccough occurred. On the 9th circumoral herpes developed. The patient remained in hospital until the 30th, when he returned to duty. He now began to suffer from slight cramps in the feet, some numbness and feeling of coldness in the hands and feet, and some weakness of the legs. Marked thickening of the skin of palms and soles occurred, and the skin peeled off here in the middle of November. In consequence of these symptoms the patient came home in November, and he consulted me on Dec. 19th, 1922. Slight anæsthesia to a light touch was found in the hands and feet, and some thickening of the skin of the palms and soles was clearly present. The patient consented to some of his hair being removed for purposes of analysis, and Dr. Roche Lynch kindly submitted this to the electrolytic Marsh-Berzelius test. A considerable amount of arsenic was found in the hair, $\frac{1}{10}$ of a milligramme in 3 grammes of the hair.

The diagnosis in this case was clearly that of acute arsenical poisoning on Oct. 6th, 1922. In reply to my question, the patient told me that there had been considerable trouble on the 6th, on account of the misbehaviour of his native cook, who was discharged from service on the following day. The explanation of the source of the arsenical poisoning does not appear difficult of comprehension. This case is of great interest, since by reason of the knowledge of the mode of excretion of arsenic a diagnosis of acute arsenical poisoning can be definitely made as long as ten weeks after the poison had been administered.

ADVANCEMENT OF KNOWLEDGE DURING THE WAR.

As a result of the war our knowledge of toxicology has become greatly increased. The use of tetrachlorethane in the manufacture of aeroplanes led to the occurrence of a number of cases of toxic jaundice, and it was the toxic action of this poison on the liver which caused degeneration of the liver cells and jaundice. In some of the severe cases death occurred from icterus gravis, the post-mortem appearances being those of acute yellow atrophy. Poisons used as munition explosives, such as tri-nitro-toluene, di-nitro-benzene, picric acid, &c., produced toxic jaundice in a precisely similar manner. The jaundice following the use of arsenobenzol derivatives has, during and since the war, been of very common occurrence. It is a toxic jaundice precisely similar to that occurring from tetrachlorethane and other similar poisons.

The discussion at the British Medical Association meeting in Glasgow, July, 1922, on Degenerative Diseases of the Liver, amply illustrated the close and important relationship between toxicology and medicine. Indeed, much of our recent advance in knowledge on liver diseases and hepatic function has arisen in consequence of the toxicological studies of the action of various poisons on the liver.

Numerous other instances might be cited of the great value of toxicological research not only in

toxicology, but in the advancement of the knowledge of the function of organs and the action of drugs. Toxicology, like medicine, owes its great advances during the past hundred years to advances in scientific knowledge and the gaining of detailed and accurate information by experimental observations in the laboratory. The close coöperation of the physician, who carefully observes the clinical toxic effects of poisons, with the toxicological chemist, who conducts in the laboratory the fullest analytical investigations, will produce the highest results in this important branch of biochemistry and medicine.

DIASTASE IN BLOOD AND URINE AS A MEASURE OF RENAL EFFICIENCY.

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AND

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THE concentration of urinary diastase has been widely used as a test of both pancreatic and renal efficiency. Comparatively few investigators, however, have estimated the blood diastase, and even fewer have determined simultaneously the values for blood and urine. Particular attention has therefore been paid to these points. The estimations in urine have been made by Wohlgemuth's method, and in blood by the same method or by a "drop" modification, mentioned below.

Corbett (1913) used a Wright's pipette with a fiducial mark to measure the unit volume of serum. At the suggestion of Dr. E. ff. Creed we have employed dropping pipettes of the pattern used in Dreyer's method of estimating agglutinins. Corbett found "there was no practical difference in the results, whether equal volumes of serum were digested with increasing volumes of starch, or whether equal volumes of starch were used with decreasing volumes of serum." Our experiments confirm this statement. Twenty-three samples of blood have been estimated with identical results by the two methods. One drop of serum is placed in each of a series of tubes and 1, 2, 3, &c., drops of 0·1 per cent. soluble starch in 0·5 per cent. sodium chloride (see Cole, 1920) are added. For values above 20, a preliminary dilution of serum 1 in 10 with 0·9 per cent. saline is made. The following advantages are claimed for such a method: (1) Very small quantities of serum (less than 1 c.cm.) are required, thus allowing repeated observations on the same patient. 2. The diastatic index can be easily estimated to a single unit; the result is recorded in whole numbers; the decimal places recorded by the ordinary method give a false idea of its accuracy. 3. The tests can be set up very rapidly. 4. No calibrated pipettes or burettes are required. 5. The use of a teat removes all risk of contamination with saliva.

Preliminary Experiments.

(*a*) *Plasma and Serum give Identical Results.*—Corbett (1913) found "that the values obtained from the serum were a little higher than those from the plasma." To test this point blood was obtained from 25 patients, and each sample was divided into two; serum was prepared from one, and oxalated plasma from the other, and the diastase content of each was determined. In every instance the plasma gave the same result as the serum.

(*b*) *Blood Diastase Remains Constant Throughout the Day.*—A healthy active individual and a patient with mild diabetes mellitus were bled every hour for eight hours. The first estimation was made after a night's starvation, and two subsequent meals gave ample opportunity for observing any effect due to intake of food and digestive activity. In both individuals, however, the serum diastase remained absolutely constant. Two patients with diabetes mellitus were tested at intervals of 30 minutes for two hours, and four diabetics and two healthy students at intervals of 60 minutes for three hours. The maximum variation in diastatic index in any individual in this series was one unit. For clinical purposes, therefore, it is sufficient to make a single estimation of blood diastase at any time of the day. Furthermore, it is justifiable to compare the result of such an estimation with the diastatic index of the 24 hours' urine.

Cammidge (1920) states that in diabetes the serum diastase rises with increase of blood-sugar. We have been unable to confirm this on any given day, and have found practically no alteration in diastatic index even when the blood-sugar is doubled. This discrepancy may be due to the fact that Cammidge estimates blood diastase by the amount of sugar produced by the enzyme from a known quantity of starch, and therefore his results are not strictly comparable with ours. We have, however, occasionally observed slight variations in estimations made at intervals of several days in diabetes, but have found no constant parallelism between the concentration of diastase and the percentage of sugar in the blood of such patients.

Results in Normal Individuals.

The blood diastase of 24 healthy active individuals varied between 3 and 7 units, with a mean of 4·4. The index of 23 convalescent hospital patients, confined to bed for the greater part of the day (excluding diabetics and cases recovering from diseases of the pancreas, liver, or kidney), varied between 3 and 10 units, with a mean of 6·5. A blood diastase above 10 or below 3 may therefore be regarded as abnormal. Wohlgemuth and Noguchi (1912) gave 8 to 16 as normal for serum; Corbett (1913) found an average of about 10, and Stocks (1916) 6·7 or 8. Maclean and de Wesselow (1919) found an average diastatic value of 5 to 10 in plasma.

Our urinary findings agree with those of other investigators: 6·7 to 33·3 units for specimens of the 24 hours' urine. In every case the urinary index has been higher than that of the blood. Stocks (1916) found that the total diastase excreted per diem, *M* (the product of the diastatic index and the volume in c.cm. of the urine in 24 hours), was a useful check upon *d* the concentration of diastase, revealing those instances in which low or high values for *d* might legitimately be attributed to diuresis or oliguria. We have similarly found *M* useful, but would give 8000 to 30,000 as the normal range, instead of 10,000 to 15,000. All our specimens of urine have been collected under toluene.

Renal Disease.

The results of diastase tests in 43 cases of kidney disease may be divided into three groups: (*a*) "Diminished excretion with retention," in which the value for blood is above 10, and for urine below 6·7 (6 cases). (*b*) "Diminished excretion without retention," in which the blood amylase is within normal limits, but the concentration in the urine is lower than in the blood or of the same value (17 cases). (*c*) "Normal excretion" in which *d* is higher in the urine than in the blood (20 cases). Examples of the three groups are given in the table. By comparison with the urea and other tests of renal efficiency we conclude that diastase retention only occurs when at least three-quarters of the total kidney substance has been thrown out of action. Group (*c*) includes kidney lesions ranging in severity from "slight" to "moderately severe." Group (*b*) embraces cases which, on the whole, are more severe than those in group (*c*), but not such extreme cases as in group (*a*) in which

* Work to be included in a report to the Medical Research Council.

† Results embodied in a thesis for the Degree of Doctor of Medicine, Aberdeen, 1922.

probably less than one-quarter of the total kidney tissue is functioning.

As controls we have examined the urinary and blood diastase in a variety of diseases, in all amounting to 180 cases. "Diminished excretion with retention" has never been encountered except in severe renal conditions. On the other hand, "diminished excretion without retention" has been found in two patients with hepatic disease, seven with diabetes mellitus, three with pernicious anæmia, one with gastric ulcer, and one with gastric carcinoma. In none of these 14 patients was there evidence of kidney disease clinically, or by renal function tests. We conclude that when a subnormal concentration of urinary diastase (allowing for diuresis if present) is accompanied by a raised concentration in the blood, there is severe renal damage; but that a low *d* value in the urine is not in itself evidence of renal disease. From a study of examples of low urinary amylase we suggest that "diminished excretion without retention" results from a lessened formation of the ferment in the tissues, due either to a general depression of metabolism, or to low diets, or to both factors. Such a hypothesis is by no means at variance with the comparative frequency of "diminished excretion without retention" in kidney disease (17 out of 43 cases).

Results in Kidney Diseases.

No. (K)	Date.	Blood diastase	Urine. *d.*	Urine. Vol. c.cm	Urine. *M**.	Remarks.
			Group (*a*). *Diminished Excretion with Retention of Diastase.*			
371	11/7/21	20	3·3	1350	4500	Right renal calculus; left cystic kidney.
	14/7/21	—	2	1200	2400	
210	14/1/21	—	2	840	1700	Chronic nephritis (mixed); œdema + + +; feet incised 18/5/21; œdema fluid escaped in large quantities; *d* of œdema fluid = 1. Œdema had largely returned by Oct. 13th.
	29/4/21	4	3·3	1560	5100	
	3/6/21	20	3·3	1280	4200	
	29/6/21	10	3·3	1200	4000	
	13/10/21	8	2	—	—	
447	8/10/21	8	5	1100	5500	Chronic interstitial nephritis; death 18/2/22.
	11/11/21	13·3	6·7	1225	8200	
	30/12/21	12	3·3	1080	3600	
	5/1/22	10	—	—	—	
	5/2/22	8	—	—	—	
491	25/11/21	12	2	1850	3700	Bilateral renal calculus; operation considered inadvisable.
			Group (*b*). *Diminished Excretion without Retention of Diastase.*			
535	2/2/22	9	1	900	900	Chronic interstitial nephritis.
492	25/11/21	8	2	2130	4300	Renal tuberculosis (bilateral).
514	21/12/21	8	3·3	1080	3600	11 days before prostatectomy.
	17/2/22	9	10	1235	12400	46 days after the operation.
476	8/11/21	5	6·7	480	3200	Chronic interstitial nephritis complicated by pregnancy; abortion (induced) 16/11/21. Recovery.
	14/11/21	—	8	840	6700	
	30/11/21	8	3·3	450	1500	
451	14/10/21	5	1	110	100	Chronic nephritis (mixed); death 26/10/21.
516	25/12/21	4	4	—	—	Gangrenous appendicitis; suppurative peritonitis; death 26/12/21; few small abscesses of kidneys found post mortem.
455	14/10/21	3·3	1	900	900	Gastric carcinoma (inoperable) and chronic interstitial nephritis.
482	14/11/21	3·3	3·3	630	2100	Pyelitis.
			Group (*c*). *Normal Excretion of Diastase.*			
388	21/7/21	10	10	1440	14400	Vesical calculus; successfully removed.
524	6/1/22	8	20	760	15200	Chronic parenchymatous nephritis.
367	4/7/21	8	23·5	840	19700	Left pyonephrosis; successful nephrotomy.
405	2/8/21	6·7	18·7	1200	20000	Successful prostatectomy.
503	5/12/21	6	13·3	900	12000	Left renal calculus; successful nephrolithotomy.
510	16/12/21	5	8	900	7200	Postural proteinuria.
453	15/10/21	3·3	8	700	5600	Postural proteinuria.
404	30/7/21	3·3	20	960	19200	Prostatectomy; death in 36 hours from uræmia, 10/8/21.

* Calculated to the nearest hundred.

In one case (K 404) the diastase tests failed to reveal a very extensive degree of renal damage. The patient died from uræmia 24 hours after prostatectomy. His diastase in both blood and urine was normal, but the urea-concentration test gave a result of 1·55 per cent., and one physician considered him uræmic on clinical grounds before the operation, although the surgeon was not of that opinion. The case illustrates the necessity of weighing up all the evidence, clinical and laboratory, in assessing renal efficiency. Case K 210 is particularly interesting. There is a low urinary diastase throughout, but the blood *d* varies greatly. At first it is normal (29/4/21), but later there is definite retention. The fluctuations in blood amylase are probably, in part at any rate, dependent on variations in the amount of œdema as a result of incising the feet. Clinically the patient became slowly but progressively worse.

In conclusion we have found estimations of diastase in both blood and urine of value in confirmation of other renal efficiency tests, but would never rely on an estimation confined to the urine.

Summary.

1. It is immaterial whether serum or plasma be used for estimation of blood amylase.

2. The concentration of the enzyme in the blood remains constant throughout the day.

3. Normally, values for blood lie between 3 and 10 units.

4. It is necessary to demonstrate retention of diastase in the blood before concluding that disease of the kidneys is responsible for a diminished excretion of the ferment.

5. Diastase estimations have been found useful in confirmation of other renal efficiency tests, but only in severe cases.

NOTE.—Since the above work was done it has been shown that estimations of urinary diastase may be affected by the reaction of the urine (THE LANCET, 1922, ii., 68; *Brit. J. Exper. Pathol.*, 1922, iii., 133). This may account for some of the cases with diminished excretion without retention, but not for all. At the time of writing only 30 urines have been tested after adjustment of reaction to pH 6·7, and the majority of these have shown an increase exceeding 20 per cent. A fair number, however, have not been increased appreciably after correction. There still remains a proportion of cases with "diminished excretion without retention" in both renal and non-renal diseases, for which reason the conclusions in the above paper still hold good.

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GLUCOSE TOLERANCE IN CHRONIC ARTHRITIS *

AND ALLIED CONDITIONS.

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Pemberton and others[1] published in 1920 a series of articles bearing on 400 cases of arthritis in the American Army. Pemberton, dealing with the cases from the dietetic and laboratory sides, shows that in a considerable percentage of cases of arthritis there is a definite relationship between the intake of food on the one hand, and the incidence or perpetuation of the symptoms of the disease on the other. Of the three food-stuffs—fats, proteins, and carbohydrates—there is evidence that carbohydrates have the greatest influence on the perpetuation of symptoms. Hence, he determined to ascertain whether there was any difficulty in the metabolism of carbohydrates, and with this object he investigated in 60 cases of arthritis the fasting level of the blood-sugar and the response of these cases to the so-called glucose-tolerance test. It was evident from these investigations that sugar intolerance was increased in a very large number of cases of arthritis, and that—though the intolerance disappeared after the removal of the infective focus in a certain number of cases—the articular condition was not specially improved by the removal of the infective focus or foci, and did not markedly improve until the patient had been kept for some time on a diet in which the carbohydrates were very much restricted.

Object and Scope of the Investigation.

The object of the research here described was, if possible, to corroborate Pemberton's work in cases of arthritis occurring amongst the civil population, as contrasted with Pemberton's cases which were derived from picked young adults of the United States Army, in none of whom the disease could be termed very chronic. The research was undertaken at the Royal Bath Hospital, Harrogate, which, with the convalescent home attached to it, contains 150 beds practically all devoted to cases of arthritis. Hence the material for investigation was ample, and of necessity some choice had to be made, though the cases were not specially selected. We decided to examine 100 cases, and a limited number were taken from the admissions to the hospital each week.

The scope of the investigation was widened beyond the limits of Pemberton's work, as we decided that, in addition to the determination of the glucose tolerance in each patient, and the repetition of the test in the case of some of them after the removal of the infected foci, it would be advisable in as many cases as possible, to obtain blood cultures, ascertain the Wassermann reaction (W.R.), make bacteriological and short chemical examinations of the urine and fæces, as well as cultural examinations of other foci of infection, such as apically infected teeth, tonsils, nasal sinuses, &c., with the object of identifying otherwise undetected foci of infection. In this preliminary report we propose only to deal with the findings of the glucose-tolerance reaction and the biochemical and bacteriological examination of the blood, and reserve the cultural examinations of the urine, fæces, and foci of infection for a subsequent report.

Technique.

The estimation of the blood-sugar percentage was carried out in strict accordance with the method described by Prof. H. Maclean.[2] The glucose-tolerance tests were carried out according to the following procedure: The patient had a light supper the night before the test, and no food in the morning. On the day of the test, specimens of blood for the determination of the blood-sugar percentage and of urine for chemical analysis were obtained, and immediately afterwards 100 g. of glucose in 200 c.cm. of water were given. Half an hour after the ingestion of the glucose solution a second specimen of blood was taken. One hour after the ingestion of the glucose solution a third specimen of blood was taken and another specimen of urine. One and three-quarter hours after the ingestion of the glucose solution a fourth specimen of blood was taken. Two and a half hours after the glucose solution a further specimen of urine was taken, and in certain cases a further specimen of blood also.

Generally the test commenced at 8.30 A.M. The requisite amount of blood, 0·2 c.cm., is obtained from the lobe of the ear in specially manufactured pipettes, and diluted with 23·8 c.cm. of acid sodium sulphate solution in an Erlenmeyer flask. The mixture is then brought to boiling point over a guarded bunsen flame, the size of the flame being regulated by a manometer as per Maclean's method. 1 c.cm. of dialysed iron is now added slowly, the flask being shaken gently all the while. This completes the precipitation of all the protein material present in the blood. The mixture is then cooled and filtered through a starch-free filter-paper into a dry flask. The filtrate comes through the filter-paper as a clear crystalline fluid and perfectly free from protein; 20 c.cm. of this filtrate—i.e., four-fifths of the original 25 c.cm. of fluid—is taken, and the sugar present is estimated by boiling the liquid with a known excess of copper sulphate solution. The excess of copper sulphate is then estimated, and from this figure the blood-sugar percentage can be calculated. The method is accurate and consistent, as Table I. will show.

TABLE I.—*Results of Duplicate Estimations of Blood-Sugar Percentage in a Series of 12 Cases in Routine Laboratory Work.*

1	*2*	*3*	*4*	*5*	*6*
0·111	0·221	0·078	0·218	0·119	0·231
0·109	0·220	0·076	0·216	0·120	0·230
7	*8*	*9*	*10*	*11*	*12*
0·112	0·125	0·180	0·115	0·089	0·100
0·114	0·122	0·182	0·116	0·088	0·099

From the table it will be seen that the method gives consistent results with duplicate specimens of blood. The importance of taking specimens of blood for blood-sugar determinations at short intervals after the ingestion of the glucose solution should be emphasised, for in a large percentage of cases the maximum point on the blood-sugar curve is reached within the first hour, and in many cases the reading obtained after the first half hour is the only one which affords information regarding slightly lowered glucose tolerance. Many of the curves show a drop below the fasting level towards the end of the test. The other specimens—viz., the blood, urine, fæces, &c., for culture, and serum for the W.R.—were obtained at times most convenient for the patients, and were examined by the usual laboratory methods.

It was considered desirable that the whole investigation should be completed before any analysis of the results were made, and though this had many advantages, it deprived us of the opportunity of repeating observations in certain, though a very few, doubtful cases. There are many short-comings in the investigation, and we look upon it merely as a preliminary to further work which we hope to carry out this year and to continue at a future date. At the commencement it was hoped that the glucose-tolerance test might serve not only as a guide to diagnosis and prognosis, but also to furnish an index for the dietary of the patient. The rationale of a restricted diet in these cases can certainly be questioned, and it seems difficult to understand why the restriction of carbo-

* An extract from a paper read before the Harrogate Medical Society.

hydrate should influence the arthritic symptoms, especially when we know of the protein-sparing property of carbohydrate. The great loss of weight seen in certain of these types of cases would rather suggest that they were greatly in need of carbohydrate in increased quantities. In our further investigations we propose to try the effects of a restricted carbohydrate diet in certain types, which at present we will not define.

To facilitate the analysis of this investigation it became necessary to try to arrange the cases of arthritis investigated under some classification which would be readily recognised. For this purpose we adopted a classification modified from one which had been used by one of us (G. L. K. P.) for some time, of which the groups and subgroups are as follows:—

Classification of Arthritis.

1. *Infective.*—(*a*) Arthritis associated with specific organisms (gonococcus, tubercle, streptococcus, malaria, &c.); (*b*) arthritis of unknown origin; (*c*) arthritis in association with zymotic disease (scarlet fever, measles, &c.); (*d*) septic arthritis; (*e*) rheumatic fever.
2. *Metabolic.*—(*a*) Gout; (*b*) arthritis associated with deficiency of endocrine glands; (*c*) scurvy, hæmophilia.
3. *Neurotrophic.*—Tabes, syringomyelia.
4. *Traumatic.*—(*a*) Injury (dislocation, loose bodies, sprains); (*b*) static (villous arthritis of Goldthwait, arthritis associated with flat-foot, coxa vara, knock-knee).
5. *Degenerative.*—(*a*) Senile osteoarthritis (morbus coxæ senilis, Heberden's nodes); (*b*) a sequela of traumatic, infective, and metabolic arthritis.
6. *Toxic.*—Anaphylaxis, horse serum, &c.
7. *Periarticular Fibrositis.*—Jaccoud's chronic fibrous rheumatism, chronic articular rheumatism.

Explanatory Notes on the Classification.

The term "associated with" is used in the infective group, as we recognise that the presence of an infective focus or foci is not conclusive proof that it is the only causal factor in the disease; and one of the principal reasons this investigation was undertaken was an attempt to determine other causal factors that might be present. Arthritis "of unknown origin" is specially intended to refer to those difficult cases in which no infective focus has been found, which are polyarticular in character, occurring in young women and which tend to progress—i.e., true cases of "rheumatoid arthritis," a very small proportion of the cases of chronic arthritis.

This classification does not pretend to be perfect, but according to our present-day knowledge, it is as far as one can go, and it is essentially clinical in character. We have arranged the cases under this classification, and have divided them into nine groups. No doubt we have made mistakes; there are several cases which, from a clinical point, we should like to review again.

The cases, arranged in tabular form, are given in Table II.

TABLE II.

Group.	Infective. A.	Infective. B.	Metabolic.	Traumatic	Degenerative.	Periarticular fibrositis.	Muscular fibrositis.
No.	1* 2† 3‡	4	5	6	7	8	9
No. of patients	19 19 12	6	3	8	14	11	8

* Mild; † severe; ‡ arrested.

We see that 56 per cent. of the cases belonged to the infective group, 3 per cent. to the metabolic group, 8 per cent. to the traumatic group, 14 per cent. to the degenerative group, 11 per cent. to the periarticular fibrositic group, and 8 per cent. to the muscular fibrositic group. The infective group A we have divided into three subgroups—mild, severe, and arrested; these subdivisions will be dealt with later in the paper. Table III. shows the method of setting out the principal findings and progress of each case investigated; the whole series of nine groups was treated in this manner, but from considerations of space we include Group 1 only.

At the commencement of the investigation it was considered desirable that the glucose-tolerance response should be determined on a number of normal healthy individuals. The test was carried out with these subjects on similar lines to that already sketched out and the figures given in Table IV. were obtained.

From this table it is evident that the maximum blood-sugar percentage in a normal individual during a glucose-tolerance test falls below 0·17 per cent., and we have taken this figure as the dividing line between the normal and the pathological response. A blood-sugar percentage of 0·17 is generally accepted by most workers as the maximum limit for the healthy individual. It was hoped that something might have been gained by making graphs showing the variation of

TABLE III.—*Group 1 (Infective, Sub-Group A, Mild Type).*

Serial No. of case.	Sex.	Age.	Duration of condition in years.	Joint or joints affected.	Glucose-tolerance findings. 1	2	3	4	Sugar passed in urine during test.	Degree of intolerance.	Blood culture.	Wassermann reaction.	Progress.
8	M.	32	6/12	A. & F.	0·093	0·142	0·117	0·096	Nil.	0	—		Marked.
15	M.	64	20	P.	0·081	0·144	0·130	0·092	Nil.	0	—		Moderate.
31	F.	26	3/12	A. & F.	0·062	0·126	0·1	0·071	Nil.	0	—		Marked.
34	F.	43	3	P.	0·104	0·137	0·121	0·103	Nil.	0	—		,,
63	M.	53		P.	0·121	0·127	0·128	0·11	Nil.	0	—	—	Moderate.
66	M.	61	3/12		0·091	0·142	0·136	0·112	Nil.	0	—	—	,,
76	F.	27	4	H.	0·108	0·148	0·14	0·121	Nil.	0	—	—	,,
105	F.	47	2	F. & K.	0·089	0·121	0·121	0·103	Nil.	0	—	—	,,
106	F.	35	10	P.	0·141	0·150	0·126	0·090	Nil.	0	—	—	Marked.
58	F.	56	10	K.	0·07	0·24	0·15	0·111	+	+ + +	—	—	Moderate.
62	M.	41	1	P.	0·109	0·201	0·179	0·14	+	+ +	—	—	,,
9	M.	31	4	P.	0·118	0·187	0·138	0·120	Nil.	+			,,
18	M.	42	9/12	P.	0·087	0·162	0·142	0·110	Nil.	0	—		Nil.
22	M.	29	5/12	P.	0·106	0·164	0·138	0·11	Nil.	0	—		Doubtful.
51	F.	43	9/12	P.	0·05	0·16	0·08	0·05	Nil.	0	—		Nil.
78	F.	41	15	P.	0·087	0·162	0·141	0·107	Nil.	0	—	—	Marked.
3	F.	20	2	P.	0·116	0·168	0·112	0·1	Nil.	0	—		,,
5	F.	40	18/12	P.	0·137	0·212	0·170	0·119	+	+ +			,,
27	M.	45	5	W. & H.	0·053	0·187	0·140	0·075	Nil.	+			Moderate.

ABBREVIATIONS.

Joints Affected: A., ankle; E., elbow; F., foot; H., hip; K., knee; S., shoulder; W., wrist; P., polyarticular (used where three or more joints are involved).

Glucose-Tolerance Findings: Blood-sugar percentages (1) fasting; (2) half an hour; (3) 1 hour after; and (4) 1½ hours after glucose meal.

Sugar Passed in Urine During Test: +, sugar in small quantities; + +, moderate amount, up to 0·5 per cent.; + + +, marked amount, over 0·5 per cent.

Degree of Intolerance: It is premised that when the blood-sugar percentage of the patient during the glucose-tolerance test rises to 0·17 per cent. or higher, there is present some glucose intolerance or a lowered glucose tolerance; + denotes slight degree of intolerance (0·17 per cent. to 0·19 per cent.); + +, moderate degree of intolerance (0·19 per cent. to 0·22 per cent.); + + +, marked intolerance (0·22 per cent. or higher).

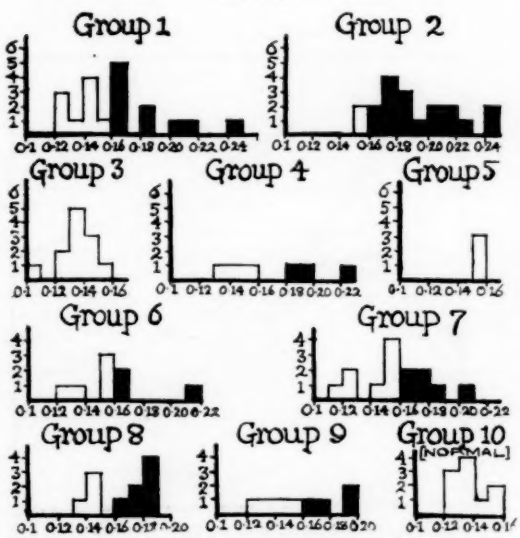
Blood Cultures: Negative denotes no growth after cultural examination.

TABLE IV.—*Glucose-Tolerance Tests on Normal Individuals.*

Case.	Before glucose.	Hours after.			
		½	1	1½	2½
1	0·108	0·135	0·100	0·100	0·086
2	0·089	0·127	0·120	0·110	0·102
3	0·103	0·154	0·127	0·104	—
4	0·104	0·127	0·089	0·070	—
5	0·090	0·121	0·119	0·097	—
6	0·1	0·15	0·12	0·1	—

the blood-sugar with the duration of time elapsed since ingestion of the glucose meal. This method proved too cumbersome, and in its place we have plotted the highest blood-sugar percentage given by patients during the glucose tolerance test against the number of patients in each group giving that percentage. In this way an easy comparison can be made between the varying glucose tolerance responses of the cases in each group and between the groups themselves. (See Fig. 1.) Referring to these graphs it will be seen

FIG. 1.



Blood-sugar percentages given by patients during the glucose tolerance test, and number of patients giving those percentages in the various groups. Shaded areas represent abnormal sugar tolerance (i.e., over 0·17).

that in Group 1 the average maximum blood-sugar falls below the normal maximum range—i.e., below 0·17 per cent. In the large number of the cases the range of the blood-sugar percentages approximates very closely to normal. In this group only five cases show a blood-sugar higher than the maximum normal.

It must be emphasised here that the glucose tolerance test is merely a ready method of ascertaining deviation of a function which is undoubtedly complex and dependent on many factors not fully understood. The way in which the height of blood-sugar curves are influenced by toxins is open to much speculation; for instance, the toxin may directly stimulate the action of the diastase of the liver and muscles, or it may inhibit their glycogenic power. Again, focal toxins may act on higher cerebral centres. Also the well-known protein sparing property of carbohydrate, especially in long-sustained fevers, suggests that carbohydrate is burned most readily, and, according to Olmstead and Gay,[3] is possibly "mobilised to protect protein." Hence, other factors besides the severity of the arthritic process may influence the response to the glucose meal. If we refer to the further progress of this group we find that there is marked improvement in six cases of the group, moderate improvement in ten cases, while in the remainder there is little or no improvement. Thus, in 85 per cent. of the cases of this group the condition of the patient has been improved by the removal of the infective focus, medicinal, hydro-, and electro-therapeutic measures including the use of vaccines in selected cases.

From Fig. 1 it will be seen that in Group 2 the average maximum blood-sugar percentage is 0·19, and that the majority of cases in this subdivision show a marked intolerance to the glucose meal. The further progress of these cases is instructive. In eight only has there been any moderate or marked improvement after prolonged treatment both at the Royal Bath Hospital and after return to their homes. This figure is a marked contrast with that found in the previous group, and emphasises the fact that a marked intolerance to glucose in a severe and actively progressing infective arthritic patient indicates a guarded prognosis. In some cases the termination may be fatal, as in one case of this series.

Group 3 is composed of a series of patients who might best be described as suffering from post-infective effects. The active infective condition in these patients appears to have been arrested, and the patients were suffering chiefly from the disabilities brought about by the disease, rather than the disease itself. As might be surmised, the average maximum blood-sugar percentage lies well within the normal range. No marked improvement was shown in any case of this series after treatment, though there was some alleviation of the disabilities through massage, ionisation, hot-air treatment, &c.

Group 4 contains cases considered to be infective in origin, but in whom no infective focus was found. These are the cases which we have already referred to, occurring in young women. Strangeways has recently, in a personal communication, expressed the view that this type of case never occurs in men, and though we have included one case of a male in this group, we are by no means certain that it should not have been included in the group of periarticular fibrositis. It must always be remembered that the problem of unearthing the infective focus is most difficult. Every avenue must be explored, and any additional aid in proving the presence of a focus is most valuable. In this group of cases the average maximum blood-sugar percentage during the glucose tolerance tests falls above the average maximum normal range.

Group 5 includes only three cases—all of arthritis due to derangement of metabolism—i.e., gout. The blood-sugar percentage in this series falls within normal limits. In Group 6 the average maximum blood-sugar percentage falls within the normal range. In Group 7 the infective element may be considered as largely in abeyance. The average maximum blood-sugar percentage during the glucose tolerance test is 0·157 per cent., and this lies within the normal range. In Group 8 the average maximum blood-sugar percentage during the glucose tolerance tests lies slightly above the average normal limit. This fact is consistent with the accepted opinion that many fibrositic conditions are infective in origin. Group 9, which includes those cases allied to arthritic conditions —viz., muscular fibrositis, is very similar to Group 8. Undoubtedly many cases of muscular fibrositis have their origin in some infective focus or other.

Group 10 comprises a series of maximum blood-sugar percentages in ten normal subjects during glucose tolerance tests; the average height in these ten cases is 0·135 per cent.

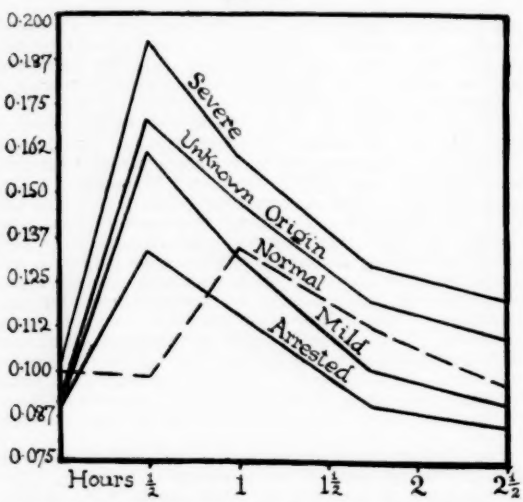
A survey of these graphs will bring into prominence the marked variation in the maximum blood-sugar percentages in cases of infective arthritis of varying severity. In Group 1 there is little departure from the normal glucose curve, while in Group 2, the severe cases of this sub-group, the departure is most marked. Again, in Group 3, the "arrested" cases of the sub-group, the glucose tolerance tends towards a normal figure. The remaining graphs showing departure from the normal represent the group of

"infective cases of unknown origin" and the two groups periarticular fibrositis and muscular fibrositis.

In general it may be said that the height of the blood-sugar curve in the glucose tolerance tests in arthritic cases is largely proportional to the activity of the arthritic processes. Further, we are of the opinion that the severity of the arthritic process per se varies directly as the activity of the infective focus. As the active process declines so also does the height of the blood-sugar curve. No fixed rule exists, however, since some apparently severe cases give a normal or only slightly disturbed sugar tolerance curve. Four cases of the severe type (Group 3) of this series fall into this category. On the other hand, accurate classification of the types of arthritis is oftentimes exceedingly difficult and can only be made after long observation. Hence it is not always possible to place every case in its proper group.

In Fig. 2 we have plotted out the average blood-sugar curves given in Groups 1, 2, 3, 4, and in the healthy normals during the glucose-tolerance tests. This chart gives a graphical representation of the facts stated above. Pemberton, in his publications on arthritis in soldiers of the American army, gives a

FIG. 2.



Average blood-sugar curves during glucose-tolerance tests.

graph (Fig. 3) showing the average blood-sugar curves in the glucose-tolerance test for the several severe moderate, mild, and convalescent arthritics, and normals.*

The similarity between these two graphs is striking. The results, obtained in the glucose-tolerance tests in patients suffering from arthritis amongst the civil population, differ little from Pemberton's figures obtained from arthritics from the American army.

In a limited number of cases of the series the glucose tolerance response was ascertained after gross foci of infection had been removed, and we have tabulated the findings. (Table V.)

Corresponding to the fall in the glucose-tolerance curve in these four cases there was an improvement in their clinical condition. In Case 11, Case 28, and Case 37, there is a very marked reduction in the height of the glucose-tolerance curve after operative procedure for the removal of septic foci. This reduction does not always take place immediately after the infective focus has been removed, therefore a few weeks should elapse before a subsequent glucose-tolerance test is made. It is to be hoped that further opportunities will arise for the repetition of the glucose-tolerance tests after removal of foci of infection

* Pemberton: Archives of Internal Medicine, March, 1920.

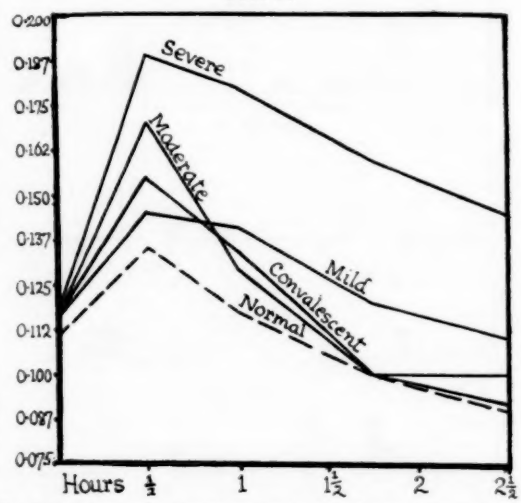
TABLE V.—*Showing Effect of Removal of Septic Foci on Glucose-Tolerance Curve.*

Case.	Time.	Fasting blood-sugar per cent.	Blood-sugar percentage after glucose meal.		
			½ hr.	1 hr.	1½ hr.
11	On admission	0·093	0·225	0·163	0·143
	after tonsillectomy.	0·1	0·153	0·129	0·103
28	On admission	0·130	0·202	0·156	0·150
	after treatment and dental extractions.	0·073	0·141	0·129	0·081
37	On admission	0·121	0·137	0·127	0·1
	after tonsillectomy.	0·086	0·135	0·112	0·07
38	,, ,,	0·112	0·181	0·156	0·119
		0·088	0·169	0·133	0·117

in cases of arthritis. Such a test, if consistent, should be extremely useful in ascertaining whether or not a given focus infection is the focus causative of the arthritic condition.

Blood Cultures.—Blood cultures were carried out for practically all the patients of the series. The medium

FIG. 3.



Pemberton's graph, showing average blood-sugar curves in his glucose-tolerance tests.

used was ordinary bouillon containing 1 per cent. of glucose. Five to ten c.cm. of blood was taken from the most prominent vein around the elbow under aseptic precautions, and mixed with the glucose bouillon. It was then incubated at 37° C. for 48 to 72 hours. All the cultures remained sterile. This is in accordance with the fact that positive blood cultures are very rare in chronic arthritic cases. Pemberton, in his series, found few positive blood cultures.

Wassermann Reactions.—The W.R. of the blood sera of 53 cases of the series were ascertained and were found uniformly negative. Hence, there is no evidence in this series that specific disease plays any rôle in the causation of non-specific arthritis.

Conclusions.

1. In general the findings of Pemberton have been corroborated.

2. A lowered glucose tolerance is present in a large proportion of cases of arthritis and muscular fibrositis. This lowered tolerance is specially marked in the great majority of the severe infective cases as well as in the cases of periarticular fibrositis and muscular fibrositis.

3. The degree of intolerance is roughly proportional to the activity of the arthritic process.

4. The glucose toleration reaction tends to return to normal with convalescence and recovery. The return to normal, in most cases, is most rapid when the infective foci have been removed.

5. The estimation of glucose tolerance taken in conjunction with the other clinical signs and symptoms is of assistance in classification as well as in the prognosis of cases of arthritis.

6. In cases with a markedly lowered glucose tolerance, and in which the focus of infection cannot be found and removed, the prognosis is bad.

Our thanks are due to our colleagues on the staff of the Royal Bath Hospital for much help and encouragement throughout this investigation, and also to Messrs. N. Lissimore and S. Linfoot for their generous coöperation in the laboratory work.

References.—1. Pemberton and others: Arch. Int. Med., 1920, April, May 23rd. 2. Maclean: Biochemical Journal, July, 1919. 3. Olmstead and Gay: Studies of Blood-Sugar Curves following a Standardised Glucose Meal, Arch. Int. Med., March 15th, 1922, vol. xxix., No. 3.

OBSERVATIONS ON ASTHMA IN CHILDHOOD.

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THIS paper is based on the results of specific tests and on general clinical experience. It is proposed in it (1) to advert very briefly to the nature of asthma; (2) to consider tests in diagnosis; and (3) to discuss certain points in treatment.

Nature of Asthma.

The phenomena of an asthmatic attack result from the discharge of energy from the bronchial centre in the medulla, this discharge being stimulated by excitants of an anaphylactic, reflex, or psychical nature, or by combinations of these. These excitants are, however, only capable of causing this discharge when the centre is in a condition of hypertonus. It has always been recognised that inheritance was common in cases of asthma; it might be inheritance of an irritable bronchial centre, of a toxic idiopathy, or of both.

On the other hand, there is much evidence going to show that both irritability of the bronchial centre and a toxic idiopathy may be acquired.

The power of the psychical element in causation is well illustrated by Osler's report of the effect of smelling an artificial rose, Freeman's story of a mustard field, and Hurst's experience at Salisbury. As regards a reflex cause the nose, bronchial mucous membrane, stomach, and intestine are recognised as important foci of excitation, the difficulty being to prove whether such excitation acts in a purely reflex manner or is the origin of anaphylactic phenomena. What indications have we as to the nature of the asthmatic tendency—be it hereditary or be it acquired—in the light of modern views as to the anaphylactic character of the asthma phenomenon?

The tendency is certainly very closely connected with the activity of the central nervous system. Experimentally, general anæsthesia prevents the development of anaphylactic phenomena. Not only so, but when the exciting dose is given to an animal while under general anæsthesia, on recovering consciousness the animal is found to be vaccinated or desensitised. In a case of asthma we have to deal with contraction of bronchioles and secretion of bronchial mucus brought about by excitation of fibres of the vagus nerve. We have, then, particularly to deal with the autonomic or vegetative nervous system, and more especially with the parasympathetic. If the broncho-motor part of the nucleus of the vagus is unduly excitable, asthmatic symptoms may be produced by minimal stimuli. If the underlying condition is more general, it must involve in very special degree the autonomic nervous system. We have to deal with a general or a local sensitisation of the parasympathetic. We know that the two parts of the autonomic nervous system are antagonistic in function, a balance being kept by the normal function of the two—the sympathetic and the parasympathetic.

Various authors have associated asthma with vagotonia or excessive excitability of the vagus and parasympathetic. Others have found both vagotonia and sympatheticotonia or excessive excitability of both divisions of the autonomic nervous system. In either case such excitability of the autonomic nervous system must be closely associated with the functional activity of the endocrine glands. Stimulation of the sympathetic nervous system causes increased secretion of the thyroid, pituitary, and suprarenals, and probably diminished secretion of the pancreas, and vice versa. Directly opposite results occur from stimulation of the parasympathetic. The effect of fatigue in producing asthma is attributed to exhaustion of the suprarenals, diminution in their secretion, and, consequently, lack of check to the activity of the broncho-constrictor fibres of the vagus. Auld lays stress on the value of treatment by thyroid or pituitary, and Alexander and Paddock refer to the frequency of status lymphaticus in their cases of asthma.

There are thus obvious grounds for saying that asthma is closely associated with the functional activity of the autonomic nervous system and with the endocrine glands. But, having said so much, we necessarily imply that there is present a peculiarity in general metabolism, and every factor bearing on metabolism must play a part more or less important in encouraging the development of, or checking the tendency to, the asthmatic condition.

Symptoms.—The symptoms of asthma commonly develop during the first few years of life. Coke and Rolleston—as others—bring sharply to the fore considerations regarding bronchitis and food. It is usually difficult and not infrequently impossible to date exactly the onset of asthma in early childhood because of its intimate association with bronchial catarrh. Bronchial catarrh is at first usually the outstanding feature in the asthmatic attack, but this fact is no reason for excluding the possibility that bronchial catarrh, particularly if frequently repeated, may in some cases, instead of being a symptom of asthma, be actually the exciting cause. In early childhood the whole central nervous system is unstable; spasm of the bronchi can readily be produced by irritation from within; repeated irritation and repeated spasm in a child whose nervous system is peculiarly unstable will eventually lead to development of symptoms with ever milder and milder stimulation. On the other hand, we have to remember that rickets and recurrent bronchitis are common conditions, asthma in comparison with them—rare.

Importance of Bronchial Catarrh.—This is, further, the period of life when measles and whooping-cough are common, both of which include bronchial catarrh among their symptoms, and to both of which the onset of asthma is sometimes attributed. Rolleston[1] states that:—

> "After infections . . . hypersensitiveness to some protein becomes manifest; this may be ascribed to some residual bacterial infection and to the absorption of the foreign protein thus provided. It is also possible that the infection so alters metabolism in the liver and elsewhere that protein bodies of so abnormal a character as to be 'foreign' are produced."

It is also possible that the prolonged intrabronchial catarrh may be itself a reflex irritant. The further point here emerges as to the nature of the infecting organisms in bronchitis, and more particularly in bronchitis persisting after measles or whooping-cough.

Tuberculous infection of the bronchial glands is comparatively common in young children, and in the great majority of cases is not associated with symptoms

[1] Brit. Med. Jour., 1921, ii., 231.

of an asthmatic nature. It is, however, always wise to remember the warning of Eustace Smith that many cases of asthma in early life are due to direct pressure by swollen glands upon the air-tubes; tuberculous children are frequent sufferers from pulmonary catarrh: in these attacks the glands undergo a rapid temporary increase in size, and their enlargement may set up serious pressure upon the windpipe at its bifurcation.

Foods.—As regards foods, it is stated that absorption of the protein of some particular food, and especially milk in the first year, is the main cause of asthma. Recent advances of knowledge along this line have been largely in relation to and dependent on cutaneous reactions to various proteins, and will be more fully considered when dealing with such reactions. It is, however, advisable to note here certain points. H. W. Barber, speaking of protein sensitisation, says [2]:

"It is probable that acquired sensitisation to food and bacterial proteins depends frequently on the state of the alimentary canal, and that incomplete digestion or a catarrhal condition of the intestinal mucous membrane, may result in the absorption of proteins direct into the blood-stream, thereby rendering them capable of acting as antigens."

Histamine, formed in the intestine as the result of putrefaction, is recognised as a probable cause of one class of asthma, and Schloss has shown that although the intestinal mucous membrane of normal infants is impermeable to undigested foreign protein, this protection is impaired in abnormal conditions of the alimentary canal. Alimentary disturbance of one sort or another is of very common occurrence among children of all ages and of every class, and metabolism generally is markedly unstable.

Nervous Influences.—It is hard to draw the boundary line between errors or failures of digestion in children and nervous influences, and there is much reason for ascribing to nervous influences many cases of both glycosuria and acetonuria. Digestive upset and nervous instability frequently lead to spasm in early childhood. Rickets certainly is the chief cause of spasm, and rickets is more common among children of the poorer class than among those of the well-to-do, whereas the reverse is true of asthma. But the children of the well-to-do are usually more nervous and highly strung; they suffer much from digestive disorders and they are prone to broncho-pharyngeal affections. They live in various respects a less natural nervous life than their poorer brothers and sisters. They are often stimulated to observation, thought, attention in a manner altogether too forced, while at the same time allowed to give way to caprice and whim.

Tests in Diagnosis.

(*a*) *Protein Cutaneous Tests.*—My experience of these tests consists in the examination of 50 patients—40 child asthmatics and 10 children suffering from such conditions as epilepsy, œdema, and indigestion. Twenty-eight of the 40 cases of asthma were what may be called straightforward, uncomplicated asthmatics. Of these, nine were positive to pollens, one to dog, one to cat, and one to bacon. One was negative to mother's milk but was cured on weaning. Of the other 15 cases, averaging 17 tests each, all were negative. Several of the cases positive to pollen were tested several times and at different times of the year and found positive again. In one of these cases the information was volunteered by the parent that the boy "can bring on an attack of asthma when he likes"; in another, "We can't take him to church because he always takes an attack if he is dressed for it." The dog-asthmatic was a boy of 16 who had suffered from asthma for years, and been treated by all ordinary remedies, including vaccines. There was no indication as to cause except that since he had been going to school the attacks only occurred on returning home to Liverpool. Cutaneous tests with many foods, bacteria, cattle-hair, and goose feather were negative. To dog-hair the reaction was strongly positive. On inquiry it was found that three dogs were kept at home and that he never had asthma when away from dogs. Abstinence from dog company worked a cure. The cat-asthmatic was a girl of 18 who suffered from epilepsy. She was negative to a variety of protein tests, but positive to diphtheria antitoxin and violently positive to cat-hair. As a little child she had suffered from asthma: it was noticed that playing with the cat induced an attack: the cat was thenceforth banished and the asthma ceased. Later she developed epilepsy, and the problem put to the doctor was, "How about bringing back a cat?" The case positive to bacon was that of a boy aged 10 years who had suffered from recurrent attacks of asthma and œdema from the age of 9 months. He was negative to various protein tests, but strongly positive to bacon and mildly positive to beef. It was found that he ate a great deal of bacon, and this was cut out of his diet. Two months later he was greatly improved, but still gave a strong positive cutaneous reaction with bacon. Of the 12 complicated cases of asthma, one was a case of sneezing and œdema in a baby; the cutaneous reaction with mother's milk was positive, and the child was cured by weaning. The other 11 were cases in which the asthmatic symptom was obviously secondary to some other condition—e.g., gross indigestion, lithæmia, tuberculous adenitis, &c.—and in all these cases tests were negative.

What do we mean by the terms positive and negative, and what does the reaction signify? It has been stated that "of asthmatic children some 90 per cent. give positive reactions" (Coke)[3] and that multiple positive reactions are most common in those cases in which the asthma commenced in early childhood. Shannon[4] reports up to 16 positive reactions in various babies aged a few weeks or a few months. But this author says:—

"The interpretation of the positive reaction has been based on the occurrence of an erythema at the site of the test, as well as a wheal."

I doubt if we are justified in considering an erythematous reaction alone to be confirmatory evidence

Positive cutaneous reaction on forearm, with "control" above.

of specific anaphylactic reaction. Both asthmatic and non-asthmatic children vary considerably in the degree of erythematous reaction to cutaneous tests. Improvement in cases of multiple so-called "specific" sensitisation follows on treatment founded on these so-called specific positive reactions, but such treatment necessarily implies drastic supervision and curtailment of diet, &c., and the result of treatment is no proof that the reactions were signs of primary specific sensitisation. By positive reaction I mean the existence of a well-marked wheal. (See illustration.)

As original controls for my cutaneous tests I took six children between the ages of 9 years and 12 years—two in good health, two in fair health but with

[2] Ibid., 1921, ii., 554.

[3] Brit. Med. Jour., 1921, i., 372.
[4] Amer. J. of Dis. of Child., May, 1922.

large tonsils, and two in fair health but with pronounced thyroid hyperplasia. Each child was tested with 32 cutaneous tests, was thereafter given 1 gr. of thyroid daily for seven days, and was then again tested with the same 32 cutaneous tests.

In no instance was a wheal reaction obtained, but the degree of erythema excited varied widely. Sidlick and Knowles,[5] writing on the Value of Cutaneous Sensitisation Tests Employed in Eczema and Papular Urticaria of Childhood, conclude as follows:—

"The elimination of specific offending proteins will not affect a cure in all cases of eczema or urticaria in children. To be of value the food test must be ++ or greater. We may assume that by correcting the gastro-intestinal abnormalities an increase in the number of clinical cures is certain of attainment."

According to Herman[6]:—

"It must be remembered, however, that a skin reaction in order to be positive, must have the typical formation of pseudopod-like processes extending out from the wheal. A wheal in which there are no such processes must be considered negative even in the presence of a definitely negative control."

R. Cranston Low[7] says:—

"Cases of eczema, &c., especially in children, often give positive reactions to more than one food, and yet when the food or foods are removed from the diet no improvement occurs in the skin, and also when the patient is given these foods the eruption is not made any worse. The difficulty is to know which food, if any, is to blame, and one may get reactions to several foods and the one which is to blame be omitted, as it is impossible to test a case to all possible foods."

I have found, in a child tested *during* an attack of asthma, unusually marked erythematous reactions to *all* proteins used, but these reactions do not appear to me to be specific.

(*b*) *Bacillary Tests and X Ray Photographs.*—If we accept the probability of asthma being an anaphylactic phenomenon, we are at once faced with the possibility of the cause being bacterial in nature. We want to know, then, in the first place if there are any unusual forms or unusual numbers of bacteria present in the mouth, naso-pharynx, intestines, urine, or sputum, if obtainable. Hurst quotes Dr. John Eyre as saying "that the organism which most frequently has a specific relation with asthma is a bacillus of the Friedländer group"; Sir Leonard Rogers and others report successful results from treatment by autogenous streptococcal vaccines; Danysz pins his faith to intestinal micro-organisms—and so on. Except by autogenous vaccination or removal of specific micro-organisms it is impossible to tell the causal connexion between bacteria and asthma. Cutaneous tests are generally negative, but even so it is possible that the particular bacteria may yet be the primary cause in that they produce conditions which render possible the development of anaphylactic symptoms by other agencies.

It is always advisable to have an X ray photograph of the lungs. "Normal" chests are rare.

Treatment.

I wish to emphasise the importance of the non-specific side of treatment. Asthma in a young child is a serious condition for the patient both as regards his health and his education. It is also a trying and painful condition for his parents and friends to observe. But repetition may dull anxiety, and, failing a ready remedy, resignation to fate may supervene. Or the awe-inspiring aspect and recognition of heredity may dull or entirely overwhelm continuous effort.

The child has attached to him the label "asthma." Wanted—the antidote or cure; expected—an equally specific remedy as the disease is specific. But asthma is a condition with wide variations, and one in which many ætiological factors may be operative. In some cases the specific excitant can be determined, and for this purpose cutaneous protein tests are of notable value. In other cases the search for a specific origin is unsuccessful. In the former class of case specific therapy is indicated, in the latter it is not possible. But in both general careful supervision of methods of living is essential—a supervision which must be long-continued and may prove irksome, which may be more or less successful and will have to be modified from time to time as experience indicates—and which can be expected to meet with no dramatic success. I do not propose, then, to consider now treatment by specific desensitisation, autogenous vaccination, auto-serum therapy, peptone, chloral, organotherapy, or drugs. I merely note the importance of removal of irritant and septic foci. I wish, however, to speak more fully on the subjects of diet, climate, and discipline.

Diet.—It is necessary to recognise that loose speech and thought are wholly wrong when dealing with the diet of the individual child. If we recognise—as we must—that through diet we can influence most powerfully organic function generally, we must, at least, know approximately of what that diet consists. In how many households does any single member know accurately what a child inmate, over the age of 3 years and not in bed or on a written-out diet, eats and drinks in the course of a day? In how many instances are the details given by mother or nurse to the doctor largely inaccurate? The peculiarities of child-life and the complexities of child supervision clearly indicate the need of accuracy in dietetic plan. This, in turn, demands written instructions.

I do not wish to exaggerate the importance of diet or of indigestion in cases of asthma. After all, our knowledge as to what constitutes a satisfactory diet, and in what perfect digestion consists, is not very accurate. But we surely commit a cardinal error in the case of a child-asthmatic if we do not take the details of diet into our own hands and attempt by clear orders to establish a satisfactory dietetic regime, to remove digestive troubles, and consequently to form a basis for further procedure.

It is not uncommon to be told that between attacks the child is quite well. It is much more common to find oral sepsis, indigestion, a mal-regulated diet, and constipation present. One is told, for example, that "the appetite is capricious" or "he has no appetite" or he will eat any quantity of meat, or in another case of potatoes, or yet in another of raw fruit, and he won't touch this or that or the other thing. Or he has thread-worms or a tic, or is easily tired and develops dark rings under his eyes. In all such cases digestion is faulty and demands remedy. We have been told by different authors at different times that the diet in asthma should be of a lowered protein content, by others of a low fat content, and still others of a low carbohydrate. The first essential in every case is, however, to remember the old axiom to treat the patient and not the disease. Get within the patient's powers of digestion. Avoid a lop-sided diet. Remember that fatty food is important and usually well taken by children, but that if the power of satisfactory digestion of fat is once seriously impaired it is hard to recover, and at best can only be done slowly and not forced. Remember, again, that a common dietetic error in childhood is excessive carbohydrate food, that masses of "saps" or potatoes or sweets are highly inadvisable, and that raw fruit, if allowed at all, must be taken as directed. Remember, lastly, that a child asthmatic is a child who has given evidence of a peculiarly unstable nervous system, even if it be only in part, and that while the first consideration in drawing up dietetic regulations must be the fundamental needs of the age of the child in the light of its particular powers of digestion, yet that the protein content of the food, and particularly the animal protein, should be kept low at least until definite improvement has occurred. Rest—physical and mental as well as digestive—is the greatest digestive tonic we possess. A short period in bed is frequently the most satisfactory method of recovering good digestion.

If a case of asthma have attacks due to a specific food protein—whether discovered by the cutaneous

[5] Ibid., April, 1922.
[6] Ibid., September, 1922.
[7] Brit. Med. Jour., 1921, ii., 559.

test or not—and if in addition there be marked indigestion, nothing but general good can result from improvement in digestion, and it is even possible that the improved conditions may so alter absorption as to affect favourably the specific poison. On the other hand, should attention be entirely focussed on the specific poison to the extent of adopting only specific treatment, then, while it is true that the symptoms may disappear, it cannot but be apprehended that, basal conditions remaining unaltered, a recurrence of attacks may occur originated by a new specific poison.

Climate.—I shall not linger on this subject, extremely important though it be. In a young child repetition quickly develops into habit. It is therefore in a case of asthma very important to prevent recurrences or lengthen intervals of attacks; the earlier the age the more important is this; and change of climate may produce this result when no other discoverable means will.

Discipline.—A healthy little child is a being whose central nervous system, including his autonomic nervous system, is naturally unstable. Slight causes produce widespread results, new experiences create deep impressions. Health implies individuality, and this, combined with inexperience, leads to a desire for daring, adventure, or, at least, a desire to do the forbidden or the unusual. The natural negativism of children is due to healthy individualism in a being of unstable nervous poise. Recognition of this mental trait is common knowledge in almost all nurseries; it is, however, often misunderstood and not rarely abused. Its existence demands for proper use a suitable mental environment of suggestion and recognition of a further childish trait—namely, that of the ego being the supreme centre. Everything circles round self—self must impose itself on its environment. The important events in nurseries are feeding, defæcation, and urination. If their importance be rated too highly it is easy for the child to become conspicuous. If he be put on the chamber and mother and nurse hover around in hushed suspense while he does his deeds, consult solemnly over results, and develop prolonged fuss over him if expected results are not forthcoming, he quickly sees a glorious opportunity of satisfying his egoistic vanity and his taste for negativism. He simply sits and does not perform. At meals, likewise, unless treated with suitable unconcern and a modicum of firmness, likes and dislikes to foods are readily initiated, and by repetition become really nervous habits. The power of suggestion is great, the nervous mechanism malleable and impressionable, and habit is soon acquired.

How is it with the child whose nervous system is in part at least hyperexcitable—a child who suffers from asthma, which may be psychical, anaphylactic, or reflex in nature? He must surely require still greater care in training, and no treatment can be satisfactory which leaves such training out of account. The nervous psychical element in the causation of an attack is very marked in childhood. In some cases the condition appears to be primarily a true hay asthma, in others it may be food or animal anaphylaxis, in others perhaps reflex. But in very many, if not all, there seems to be little ground for doubt that many of the succeeding attacks are really of the nature of habit and that stimuli of almost any form may act as excitants. His condition demands treatment of peculiar nervous instability by nervous influence. Restfulness and calm are important, freedom from mental strain is necessary, and understanding suggestion from his attendants is of the greatest value. Egoism and negativism are marked characteristics of healthy children; they are more rather than less marked in ailing children. Attendants must recognise their existence, and deal with them either by avoiding their being aroused in matters of importance, or by so dealing with the subject as to ensure that the expected childish reaction will be in the direction desired.

INDICATIONS AND RESULTS OF MYOMECTOMY FOR UTERINE FIBROIDS.*

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IN recent discussions on the treatment of uterine fibroids, the alternatives of hysterectomy on the one hand and X ray and radium treatment on the other have generally been dealt with as though they exhausted the possibilities of treatment. Myomectomy has been almost entirely overlooked. At the meeting of this section in April last a paper was read by Dr. Fletcher Shaw on the X ray treatment of fibroids, as a sequel to a former paper by Drs. T. Watts Eden and F. Lionel Provis. I then felt that the case for myomectomy might well be presented, and this contribution is the result. I hold the view that in the majority of cases of fibroids requiring surgical treatment, hysterectomy is the more suitable and also the more satisfactory operation, and that the scope of myomectomy is restricted to the minority of cases. Hysterectomy requires no justification; it is generally accepted as a sound procedure, surgically and clinically. But myomectomy needs to be justified by its results, and reasons must be stated as to why it should be preferred; its limitations must also be acknowledged and the conditions of its suitability defined.

The outstanding claims for myomectomy are, first, that the uterus is preserved for the important function of child-bearing, and secondly, that the patient is thereby spared the mental distress of feeling that an essential part of her womanhood has gone. The broad-minded advocate of myomectomy will, I think, at once concede that in a woman who is past the child-bearing age the first claim disappears, and the second has only an academic existence—although, as I shall point out, there may be reasons for preserving the uterus that are not founded on its child-bearing function. But we may properly narrow the issue to the consideration of myomectomy versus hysterectomy in the child-bearing period.

The advocate of myomectomy is, then, I think, called upon to show, in the first place, that the preserved uterus is in fact, as well as in theory, capable of child-bearing; and in the second place, that there is a reasonable prospect of a cure, both anatomically and symptomatically; in other words, that in a large majority of cases there will be no return of fibroids, and that the patient will menstruate normally. The case for myomectomy will be best presented if we begin by examining the question whether it is justified by its results; and if the answer proves to be in the affirmative, we can then consider its scope and limitations. A separate short section will be devoted to the interesting subject of myomectomy during pregnancy.

Results of Myomectomy.

We may glance first at the immediate results—namely, the mortality—as compared with hysterectomy; for this purpose my own statistics will serve as well as any. The figures (to the end of December, 1922) are as follows:—Hysterectomy for fibroids: 1004 cases, 17 deaths, mortality 1·69 per cent. Myomectomy: 173 cases, 3 deaths, mortality 1·7 per cent. These figures represent all cases from 1897. The present-day mortality is lower, and the figures from the end of 1910 to date are as follows:—Hysterectomy: 701 cases, 5 deaths, mortality 0·71 per cent. Myomectomy: 113 cases, 1 death, mortality 0·89 per cent. There is thus very little difference in the mortality of the two operations; certainly not enough to make this a deciding factor in the choice of operation.

Later Results.

In my work on the after-results of abdominal operations published in 1910, I was able to give

* A paper read at a meeting of the Section of Obstetrics and Gynæcology, Royal Society of Medicine.

particulars of 40 cases traced out of 51 operated upon. Of the later 116 cases, I have particulars of 53. I did not attempt to trace the histories of patients who were over 45 years of age at the time of operation. I will take in order the three questions investigated in the previous cases.

1. *What is the Likelihood of a Recurrence of Fibroids?*—In the first series, of 39 cases examined, the uterus was found of normal size, with no return of fibroids, in 35 cases, or 90 per cent. In the present series, of 49 cases examined, or reported upon by their doctors, the uterus was normal in size without fibroids in 41 cases; it was enlarged, without fibroids, in 3 cases; in all, 44 cases without fibroids, or 90 per cent., as in the first series. In 5 cases fibroids were observed, the notes about them being: (1) Fibroid in fundus: hysterectomy advised on account of bleeding; (2) fibroid size of pea on posterior wall: (3) multiple fibroids, hysterectomy done nine years after myomectomy; (4) fibroid size of mulberry on anterior wall; (5) fibroid size of pea on anterior wall. The conclusion is that the liability to return of fibroids may be represented as 10 per cent.

2. *How is the Menstrual Loss Affected?*—In the first series the menopause had occurred before the operation in three cases, and in one case there was no further loss after operation. Of the remaining 36 cases, menstruation was normal or moderate in 31, or 84·5 per cent., and free or profuse in 5, or 15·5 per cent. In the present series we can exclude 6 cases where the menopause preceded or synchronised with the operation. Of the remaining 47 cases, menstruation was normal and moderate in 36, or 75·1 per cent.; and in 11 cases it was profuse, either at first, or later on; or there was intermenstrual loss. Taking all the cases together, we find that of 83 cases menstruation was normal in 67, or 80·7 per cent. The conclusion is that there is liability to menorrhagia or metrorrhagia after myomectomy in about 20 per cent. of cases. This result is not altogether surprising; because it is clear that unless we open the uterine cavity every time we do a myomectomy some small intra-uterine growth may easily be overlooked.

In order to show that sufficient time had elapsed to judge of results, I may mention that the time between the operation and the report on the cases in the present series was as follows:—

Years.	Cases.	Years.	Cases.	Years.	Cases.
1 to 2	4	5 to 6	1	9 to 10	7
2 ,, 3	8	6 ,, 7	12	10 ,, 11	3
3 ,, 4	2	7 ,, 8	2	13	1
4 ,, 5	5	8 ,, 9	6		

3. *Is the Uterus Serviceable for Child-bearing after Myomectomy?*—In the first series there were 15 married women under 45 years of age: of these, one was four months pregnant at the time of operation, went to term, and became pregnant again; two others became pregnant after the operation. In the present series I have after-histories of 38 married women under 45, including three who were single at the time and married afterwards. I have drawn up a table of these cases. (Table I.)

One, who was pregnant at the time of operation, died of eclampsia at her confinement; and two did not live again with their husbands after operation. Of the remaining 35, 11 became pregnant after the operation, including two patients who were pregnant at the time, went to term, and became pregnant again. One patient had two children, and another had four. In all, therefore, of 50 women who had the chance of conceiving after operation, 14 became pregnant, or 28 per cent.

Now the question that we have to decide is this: Are the results of myomectomy good enough to justify us in practising this operation in suitable cases? My answer is an unqualified "Yes," on the ground that the advantages far outweigh the disadvantages. The advantages are represented by the occurrence of pregnancy in 28 per cent. of the women who had a chance of pregnancy, and by the satisfaction which patients derived from the consciousness that they remained after the operation "like other women." This satisfaction cannot be expressed in statistics, but it is nevertheless a very concrete advantage. The disadvantages are the possibility of the return of fibroids, which is a 10 per cent. chance; and the possibility of further menstrual trouble, which is a 20 per cent. chance. Some women doubtless would prefer the assurance, which hysterectomy gives, that there will be no return of their troubles, and that the operation is therefore final. But I am persuaded that the great majority of women of child-bearing age would prefer to take the risk which the figures indicate, for the possible chance of having a baby. The risk of a second operation being necessary is not as great as 10 per cent.; hysterectomy has been required in only five cases out of the total 167—that is, in just 3 per cent.

TABLE I.—*Results of Myomectomy in Relation to Pregnancy.*

No. in present series.	Age.	Date of operation.	Pregnancies after operation.
2	38	Nov. 11, 1909.	None. Husband in asylum all the time.
10	18*	June 12, 1911.	Married since. Conf. Oct., 1921.
13	30	March 14, 1912.	None.
14	39	April 15, 1912.	P. op., went to term. None since.
19	33	June 30, 1912.	None.
23	30	Jan. 14, 1913.	None.
25	32	Jan. 30, 1913.	None.
26	35*	Feb. 3, 1913.	Married 1914. Conf. April, 1916, March, 1919.
27	34	March 17, 1913.	P. op., went to term. None since.
32	41	Sept. 25, 1913.	None.
33	31	Oct. 6, 1913.	Conf. Jan., 1915, April, 1917, March, 1919, Aug., 1922. Prior to operation had been married six years without children.
34	37	Nov. 29, 1913.	None.
39	38	April 24, 1914.	None. Died in May, 1918.
44	34	June 8, 1914.	Conf. Oct., 1917. None since.
45	34	July 9, 1914.	None.
46	29	Oct. 14, 1914.	P. op., went to 7½ months. None since.
47	42	Oct. 22, 1914.	None.
49	30	Nov. 6, 1914.	Conf. since, date unknown.
51	35	Dec. 2, 1914.	Conf. June, 1916.
58	34	Oct. 7, 1915.	P. op., went to term. Another conf. May, 1920.
59	35	Oct. 11, 1915.	P. op., went to term. Another conf. Jan., 1919.
61	35	Nov. 11, 1915.	None.
62	32	Jan. 3, 1916.	None.
63	37	April 17, 1916.	P. op., went to term. None since.
64	34	May 1, 1916.	None. Has not lived with husband since operation.
69	37	Oct. 9, 1916.	P. op., went to term. Patient died of eclampsia.
71	30	Jan. 11, 1917.	None. Premature menopause April, 1921.
72	35	Jan. 22, 1917.	Conf. Feb., 1918.
81	35	Nov. 26, 1917.	None.
82	33	Feb. 6, 1918.	None.
88	40	Dec. 30, 1918.	P. op., went to term. None since.
92	36	Nov. 25, 1919.	P. op., went to term. None since.
97	36	Feb. 5, 1920.	P. op., went to term. None since.
98	31	March 18, 1920.	None.
100	31	April 14, 1920.	None.
103	28*	June 28, 1920.	Unmarried at time of operation. Married June, 1922. Now 2½ months pregnant.
105	29	July 20, 1920.	Conf. Feb., 1922.
106	38	July 21, 1920.	None.

* Single. P. op. = Pregnancy at operation. Conf. = Confinement.

I therefore submit that, judged by the criterion of results, the advantages of myomectomy definitely outweigh its disadvantages in the surgical treatment of uterine fibroids, in a restricted class of cases. My own sense of this restriction is sufficiently expressed in the fact that of 1177 cases of uterine fibroids treated surgically, hysterectomy was done in 1004, or 85·3 per cent. The proportion of myomectomy to hysterectomy was thus 1 to 6.

We may now examine the scope and limitations of myomectomy.

Indications for Myomectomy.

There is one important indication for myomectomy, and there are several subsidiary ones. I will take the important one first.

1. *The fact that the patient is of child-bearing age.*—The younger the patient the greater should be the effort to save the uterus, and I should say that, broadly speaking, myomectomy is the operation of choice in women up to the age of 40. In single women the indication is not so great as it is in married women, especially after the age of 30; because after this age the expectation of child-bearing is necessarily less in the spinster from the fact that she has first to get married. The generalisation of age in the case of married women may well be qualified by the question of previous pregnancies; when a woman has half a dozen living and healthy children we need not be so concerned to save the uterus as we should be in the case of a woman who has had no child and is ardently desirous of having one. This reflection is well illustrated in a case of myomectomy during pregnancy, to which I shall refer later. The influence of age and of the married state upon my own practice is set forth in Table II., which shows the proportion of myomectomies to hysterectomies at different ages in single women, in married women, and in the two groups taken together. In five-yearly periods the percentage of myomectomies, which stands at 56·6 for all cases under 30 in married women, progressively falls to 40·1, 26·7, 6·1, and 5·5 and rises a little to 10·0 in the case of women over 50. In single women the percentage is 45·0 for all cases under 30, and falls to 21·3, 8·3, 8·6, and 4·0, and rises to 10·0 in those over 50. Taking all the cases together, the percentage is 52·0 in women under 30, and in successive five-yearly periods it is 34·3, 19·2, 6·9, and 5·1; and for women over 50, 10·0. It will be noticed that the proportion of myomectomy is markedly higher in married women than in spinsters up to the age of 40, after which there is not much difference.

TABLE II.—*The Proportion of Myomectomies to Hysterectomies at Different Ages.*

Age.	30 and under.		31–35		36–40		41–45		46–50		Over 50		Total.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Married women—														
Myomectomy	17	56·6	37	40·1	36	26·7	13	6·1	11	5·5	11	10·0	125	16·0
Hysterectomy	13	43·4	53	59·9	103	73·3	201	93·9	190	94·5	99	90·0	659	84·0
Total	30		90		139		214		201		110		784	
Single women—														
Myomectomy	9	45·0	10	21·3	7	8·3	8	8·6	3	4·0	4	10·0	41	11·4
Hysterectomy	11	55·0	37	78·7	78	91·7	85	91·4	72	96·0	36	90·0	319	88·6
Total	20		47		85		93		75		40		360	
All cases—														
Myomectomy	26	52·0	47	34·3	43	19·2	21	6·9	14	5·1	15	10·0	166	14·5
Hysterectomy	24	48·0	90	65·7	181	80·8	286	93·1	262	94·9	135	90·0	978	85·5
Total	50		137		224		307		276		150		1144	

2. *Association of uterine fibroids with prolapse and procidentia.*—The rise in percentage of myomectomies after the age of 50 is explained by the fact that a number of these patients had prolapse or procidentia. In the presence of this complication I consider that it is very important to preserve the uterus; because this can be fixed up to the abdominal wall when myomectomy has been done, and thus play an essential part in the cure of the displacement. When the uterus is removed in conditions of procidentia there is a marked tendency to prolapse of the vaginal walls, which is apt to be very troublesome, and to defy, in severe cases, even extensive plastic operations on the vaginal walls and perineum.

3. *A deep-rooted objection on the patient's part to hysterectomy.*—In my experience the great majority of women suffer no more than a passing regret for the loss of the uterus, especially when it is explained to them that the presence of the tumours has rendered it incapable of serving its one function, that of child-bearing; that the uterus is not the essential organ of sex, and that its removal has no effect on the specially feminine characteristics and does not render a woman any less able to live a married life. But there are a few women swayed more by sentiment than by reason, to whom the loss of the womb seems a greater calamity than the loss of life itself; to them this organ appears to be the focus and essence of their personality as women, and if hysterectomy be done, it is apt to be followed by a profound and lasting depression which approaches the border-line of mental instability. In dealing with a patient of this kind, it is clear that a special effort should be made to save the uterus, even if the age of child-bearing be past, and myomectomy entails a rather higher operative risk and the possibility of a return of fibroids. But in such circumstances the surgeon may feel disposed to advise the adoption of X ray treatment, rather than to undertake what seems to him to be an undesirable surgical procedure.

4. *Certain Characters of the Tumours.*—When a tumour is solitary and pedunculated, and not associated with excessive bleeding, a myomectomy may properly be done, whatever may be the age of the patient and the chances of pregnancy. Even an interstitial tumour unassociated with hæmorrhage may be enucleated. In fact, when none of the previously considered factors have to be considered, the deciding question will probably be "What is the simplest and safest operation?"

The Limitations of Myomectomy.

I have so far considered conditions in which myomectomy should be done unless there is some strong reason to the contrary. I have now to enumerate those in which myomectomy should not be done unless there is some preponderating reason for it.

1. *Age Factor.*—After the age of 40 to 45, I consider that hysterectomy should be the rule, especially when there are multiple fibroids and when there has been excessive hæmorrhage.

2. *Condition of Uterine Appendages.*—When fibroids are associated with double tubal disease or with bilateral ovarian tumours, hysterectomy is the proper procedure.

3. *Size and Position of Tumours.*—Whatever the position or number of the tumours, if myomectomy is going to leave a battered and useless organ, hysterectomy should be done. Cervix fibroids almost invariably call for hysterectomy, though I have occasionally done a myomectomy even in these cases. A fibroid in the broad ligament may, if enucleated, leave the uterine vessels in a highly vulnerable condition; my first myomectomy was of this kind, and I had to reopen on account of hæmorrhage. The mere number of the tumours does not greatly matter, as long as a good and serviceable uterus is left.

4. *Excessive Hæmorrhage.*—When a patient has had great losses and is seriously drained thereby, hysterectomy should be the rule. If urgent reasons call for an attempt at myomectomy, the uterine cavity must be opened, and any submucous or intrauterine growth must be removed. Otherwise hæmorrhage will continue, and the operation will have been done in vain.

5. *Temperament of the Patient.*—Just as there are a few women whose temperament renders it important to save the uterus, so there are others whose tempera-

ment will turn the scale in favour of hysterectomy. They are the patients to whom an operation is such an ordeal that whilst they will face it bravely if they have the assurance that it is going to mean a definite cure, they could not tolerate the prospect that the ultimate result of the operation might be doubtful. With them even considerations of possible future pregnancy and of preservation of feminineity have no weight compared with the all-important need for being completely and finally cured. With such a patient, if there is any doubt at all as to the issue of a myomectomy, hysterectomy should be done.

Myomectomy during Pregnancy.

Fibroids associated with pregnancy do not necessarily call for surgical treatment. When they are causing no symptoms, and do not seem likely to interfere with labour, it is best to leave them alone, always provided that the patient can be kept under observation so that operation can be undertaken if urgent symptoms arise, and that the medical attendant is on the look out for trouble during labour. After the confinement the fibroids can be dealt with on their merits. Surgical treatment may take the form either of myomectomy during pregnancy or of Cæsarean section combined with myomectomy or hysterectomy at term. In exceptional cases hysterectomy in the early months of pregnancy may be required, but it should only be done if symptoms are urgent and there are cogent reasons against the adoption of conservative procedures.

Myomectomy during pregnancy is indicated in three groups of conditions: First, when the tumour or tumours appear to be increasing rapidly in size; secondly, when the patient is suffering from pain, pressure symptoms, or indications of septic or degenerative changes in the tumours; thirdly, when the position of the fibroids makes it probable that labour will be obstructed, in which case myomectomy is done for the purpose of avoiding the necessity for Cæsarean section and of allowing the confinement to take place naturally. In the second group severe and persistent pain is, of course, a sufficient indication in itself. The effects of pressure may be exerted in relation to the bowel, the bladder, the diaphragm, the iliac vessels, or the nerves of the sacral plexus; and any one of these may call for interference. With regard to degenerative changes, it is well known that when fibroids are associated with pregnancy they are specially liable to undergo that form of necrobiosis known as "red degeneration"; and that the onset of this process is frequently marked by pain so acute and severe as to simulate the torsion of the pedicle of an ovarian tumour. In one of my cases operation was undertaken under the impression that the patient had an ovarian cyst with a twisted pedicle. In the other cases myomectomy was the intended operation. In all, I have had 13 cases of myomectomy during pregnancy, and I have thought them of sufficient interest to make a tabular statement of them (Table III.)

The period of gestation ranged from a few days to six months. In the case of "a few days," the fact of pregnancy was not known at the time; the tumour was a large subperitoneal one, and the first intimation I had of the pregnancy was two months after the operation, when the patient presented the signs and symptoms of a two months' pregnancy and stated that coitus had taken place two or three days before the operation and not since. In Case 11 the patient, aged 36, had been married ten years, and this was her first pregnancy. The uterus was a mass of fibroids, and in other circumstances I should have had no hesitation in doing hysterectomy. But a child had long been desired, and this was obviously the patient's only chance. I removed ten fibroids, several being the size of a fist, and one partly necrotic. Some were pedunculated, but several had to be enucleated from the substance of the uterine wall. She had a normal confinement at term. The results of the last two I have been unable to trace; in the remaining 11 pregnancy was not interfered with, and all went to full time, except one whose labour came on at seven and a half months, but the child was alive and survived. In Case 8 the mother developed eclampsia and died, and the child was still-born. Two other children died a few days after birth from injuries during labour, one being in a case of contracted pelvis. Both mothers had the satisfaction of a living child subsequently; the one with the contracted pelvis being delivered by Cæsarean section.

It is evident that myomectomy during pregnancy is a most satisfactory operation.

TABLE III.—*Results of Myomectomy During Pregnancy.*

No.	Age.	Date of operation.	Period of gestation.	Result.
1	35	Jan. 11, 1909.	4 m.	N. conf. June 8, 1909. M. & c. alive.
2	39	Apr. 15, 1912.	4½ m.	N. conf. Aug. 25, 1912. M. & c. alive. A first pregnancy.
3	34	Mar. 17, 1913.	3½ m.	N. conf. Sept. 8, 1913. M. & c. alive.
4	29	Oct. 14, 1914.	4½ m.	Conf. at 7½ m. Jan., 1915. M. & c. alive.
5	34	Oct. 7, 1915.	3 w.	Conf. June 21, 1916. Baby injured at birth, died three days later. Conf. of healthy child May, 1920.
6	35	Oct. 11, 1915.	2 m.	Conf. May 10, 1916; contracted pelvis; four days' labour. Child died soon after. Pregnant again; successful Cæsarean section Jan. 16, 1919.
7	37	Apr. 17, 1916.	6 m.	N. conf. Aug. 27, 1916. M. & c. alive.
8	37	Oct. 9, 1916.	3 m.	Conf. at full time. Mother has eclampsia and died. Child still-born.
9	40	Dec. 30, 1918.	3 m.	Conf. June 29, 1919. Instrumental delivery. M. & c. alive.
10	36	Nov. 25, 1919.	A few days.	N. conf. Aug. 12, 1920. M. & c. alive.
11	36	Feb. 5, 1920.	4 m.	N. conf. July 5, 1920. M. & c. alive.
12	38	Mar. 4, 1920.	3 m.	Unknown.
13	43	Apr. 12, 1920.	6 w.	Unknown.

M. = months. W. = weeks. N. conf. = Normal confinement. M. & c. = Mother and child.

Clinical and Laboratory Notes.

A NOTE ON THE

SURVIVAL OF A PREMATURE INFANT UNDER ARTIFICIAL FEEDING.

BY P. T. O'FARRELL, L.R.C.P. & S. IREL., D.T.M. LIVERP.,

MEDICAL OFFICER, DUNLOP PLANTATIONS, LTD., MALACCA, FEDERATED MALAY STATES.

THE following case seems to be of interest in that the infant weighed 35½ oz. at birth, and was born during a malarial paroxysm, and also because of her progress under artificial feeding.

The mother, a multipara, aged 34, of pure European descent, married ten years, gave birth on July 20th, 1922, to a female child weighing 35½ oz.; the last day of the last menstrual period occurred on Dec. 24th, 1921.

Previous History of Mother.—Female child, full term, born in April, 1915; miscarriage at third month in 1919. During the previous two years the mother had suffered from a number of malarial attacks; some two months before her confinement she was in hospital for 21 days owing to attacks of malarial fever of more than usual severity; during paroxysms her blood had invariably revealed sub-tertian parasitic infection. On discharge from hospital to the date of her confinement she had been ordered 5 gr. euquinine with 2 gr. of pot. brom. four times daily.

Present History.—On July 20th, 1922, she developed a shivering attack and shortly afterwards labour-pains started; on examination first stage of labour was well

advanced, the patient being in the hot stage of malarial fever with a temperature of 104° F.; 20 gr. cinchona febrifuge were given. Labour was uncomplicated and completed in about four hours with defervescence of the fever; normal head presentation. The puerperium was uneventful except that on the third day the temperature rose to 102°; the significance of this temperature might have been misleading had it not been associated with the characteristic signs of a malarial attack. The patient was ordered a liquid solution of quinine bihydrochloride, 10 gr. t.i.d., to be continued throughout the puerperium.

Condition of Child at Birth.—The weight was 2 lb. 3½ oz., the skin was wrinkled and of a markedly mottled appearance; sex characters (female) fully developed; no deformities or hernial protrusions. The child's head and body were wrapped in cotton-wool; on account of the evenness of the atmospheric temperature that exists in this district of the Federated Malay States (72° to 86° F.) the necessity of improvising an incubator did not arise; this factor no doubt contributed largely to the infant's survival.

Diet.—For the first 48 hours the child was spoon-fed with small quantities of Indian cow's milk well diluted; on the third day it was found possible to commence feeding with breast-milk, but the latter was very scanty. Feeding was carried out every two hours with the milk mixture and breast-milk alternately, until the sixth day, when the natural milk gave out. Breast-milk from other sources was unprocurable; thus, the infant was largely deprived of the full benefits of the immune bodies present in breast-milk and so necessary for defensive purposes.

Weight.—Weight at end of first week, 2 lb. 3½ oz. During the second week the milk mixture was continued; this gave rise to no alimentary disturbance, but it was apparent that the infant was not thriving; weight at end of second week, 2 lb. It was now decided to try one of the well-known, and much advertised, artificial dried milks; feeding was continued every two hours, 1 oz. liquid measure at each feed; in addition, minute quantities of cod-liver oil and malt were given; weight at end of third week, 2 lb. 2½ oz. Progress was afterwards almost uninterrupted, as shown by the following increases in weight:—

End of week.	Weight.	End of week.	Weight.
4th	2 lb. 3 oz.	12th	3 lb. 8½ oz.
5th	2 ,, 5½ ,,	13th	4 ,, 0 ,,
6th	2 ,, 8½ ,,	14th	4 ,, 4½ ,,
7th	2 ,, 7 ,,	15th	4 ,, 8 ,,
8th	2 ,, 9½ ,,	16th	4 ,, 15½ ,,
9th	2 ,, 12 ,,	17th	5 ,, 5½ ,,
10th	3 ,, 0 ,,	18th	5 ,, 9½ ,,
11th	3 ,, 4 ,,		

There has been no vomiting at any time; motions are of good colour and consistency; flatulent distension has been rather a distressing symptom, but a No. 6 rubber catheter used as a rectal tube and regular abdominal massage have given much relief to this condition.

The late Prof. Budin and other authorities have shown the high mortality (100 per cent.) to be expected in premature infants under 3 lb. in weight, and further particular emphasis is laid on the necessity for breast-feeding if survival is to be hoped for at all in such cases. This case also appears to bear out the experiences of many observers in the tropics that quinine in ordinary therapeutic doses for malaria (5 to 10 gr. t.i.d.) can be taken with comparative safety during pregnancy without inducing labour; there is no doubt that in the case recorded above it was the malaria, not the quinine, that induced labour.

POST-OPERATIVE MANIA.

BY W. J. TYSON, M.D. DURH., F.R.C.P. LOND., F.R.C.S. ENG.,

HONORARY PHYSICIAN, ROYAL VICTORIA HOSPITAL, FOLKESTONE.

CASES of post-operative mania, although comparatively uncommon, occur with such alarming rapidity that I think the following case is of interest:—

In July, 1921, I was asked by a surgical colleague to see a married woman, aged 45, with abdominal symptoms. The patient gave a neurotic history, and apparently was disappointed at being childless. The diagnosis was appendicitis; details are unnecessary. An operation was performed the same evening and an inflamed appendix removed. The wound healed rapidly aseptically.

About 36 hours after the operation the patient's mind began to wander; she quickly became maniacal, and within three days it was deemed advisable to remove her to a mental hospital. She remained there for over two months, and then returned to her home well; she has since shown no mental symptoms. Her recovery was gradual, but progressive and lasting.

Causes Assigned.—English medical and surgical text-books contain practically no references to the condition, but American medical men, especially Kelly, have written a good deal upon the subject.

The causes assigned are many and various, and mostly unsatisfactory. Neither the severity of the operation nor sepsis apparently play any part in producing the mania. The anæsthetic, the giving of drugs, some form of intoxication, or physical or mental exhaustion, have been mentioned as causative agents. But nearly all authorities agree that a predisposition, hereditary or acquired, is present in every case. Nervous instability, nervous derangement, and nervous degeneration are the underlying physical facts of this insanity. The most common form of post-operative mania is that of confusional insanity, and after this, that of melancholia; the latter generally occurs at a later date in the course of the trouble, and the prognosis is not so good as in the former variety.

Duration of Disease.—The disease comes on between the second and tenth day after operation, and its duration is from two weeks onwards. The longer the mania lasts, the less is the chance of recovery.

Treatment.—It is necessary to consider the personal history in all cases, although, of course, when operation is necessary or advisable, the past history must not stand in the way; as already stated the seriousness of the operation does not seem to count in the production of this form of insanity. A large proportion of these cases recover comparatively quickly. It seems to me that if possible the patients should not be sent to mental hospitals; a certain stigma still attaches to such patients, and many of them might be sent uncertified into mental homes.

Comparative Cases.—Two other conditions produce mania, often acute and unexpected—viz., acute pneumonia and first cases of pregnancy—both interesting and often difficult of explanation. The mania in the above cases is entirely different in ætiology and onset from the delirium which may appear in an alcoholic subject after an accident or operation.

AN UNUSUAL CASE OF DRUG SUSCEPTIBILITY.

BY H. H. MILLS, M.D. LOND.

I RECENTLY prescribed linctus codeinæ co. B.P.C. in teaspoonful doses for a lady, aged 45, suffering from a mild bronchial catarrh with an irritable cough. She took three doses, actually having 2½ dr. from a 4 oz. bottle. Within 24 hours of the first dose an intensely irritable erythematous rash appeared on the head, thence spreading all over the body. Some 20 years ago the same patient suffered in a similar way after belladonna; also, on at least one occasion a similar rash followed a simple soap-and-water enema. The linctus codeinæ co. is in such common use as a safe cough mixture that I wonder if any of your readers can recall a similar case or throw any light upon the condition. Slight iodism and bromism are fairly common, and I believe quinine occasionally causes a rash. By the way, this patient had during previous days taken several doses of bromo-quinine.

Kensington.

DONATIONS AND BEQUESTS.—By will the late Miss Maria Louisa Jeffcock, of Worksop, Notts, left, among other bequests to Sheffield, £500 to her medical attendant, £1000 to the Sheffield General Infirmary, £500 to the Jessop Hospital for Women, and £500 to the Society for the Prevention of Cruelty to Animals.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 12th, Mr. A. L. WHITEHEAD, the President, being in the chair.

Retinitis Pigmentosa Sine Pigmento.

Mr. J. A. VALENTINE showed a case which he diagnosed as this condition, the patient being a man aged 26. His sight had been failing since 1915. No relatives had similar visual defect. There was 1 D. of hypermetropia in both right and left eyes. Ring scotomata were present, but the pupillary reactions were normal and the media clear. At night the patient had to concentrate his attention on the ground in order to find his way about, but the exhibitor did not think he had night-blindness in the proper sense of the term; his difficulty seemed to be due rather to the restricted central field of vision. The light vision was normal at the central point of fixation. No pigmentation could be detected.

Amaurotic Family Idiocy.

Mr. A. LEVY showed a baby aged 19 months with this condition, the point of chief interest being that the parents were not Jewish, but English. The family resided in East London. This child had the typical discs, the peculiar cry, it had never learned to eat, and could not sit up by itself. The anterior fontanelle was still widely open, and it had been wasting for several months. The parents were first cousins.—Mr. LESLIE PATON reminded members of a case of the kind shown in 1913 by Dr. Wilfred Harris and himself, also with a pure English parentage.—Mr. TREACHER COLLINS said Sir Frederick Mott had shown that the ganglion cells of not only the cerebellum and cerebrum were involved in this disease, but those of the whole body.

Maculo-Cerebral Degeneration.

Mr. MONTAGUE HINE showed one of two brothers who were suffering from this condition. Defective vision was not improved by glasses, and the maculæ were seen to be very finely granular. The Wassermann was negative and there was nothing in the family history to suggest syphilis, nor was there consanguinity in the parents. The cerebral functions were now quite sluggish, he was almost paralysed, and had incontinence of urine.—Dr. RAYNER BATTEN agreed with the diagnosis, but said the pigmentation was not so marked as in the other cases he had seen. This case and that of the brother belonged to the juvenile type, not the infantile. In the former type the disease always came on at about the same age—i.e., bordering on puberty. In one class pigmentation occurred without the cerebral symptoms.

Case for Diagnosis.

Mr. PERCY BARDSLEY showed a young man, a theological student, whose complaint was that he quickly tired, and could not work more than five hours a day. The arteries and veins in the ocular fundus were remarkably bright. Based upon the blood examination, which showed 7,600,000 reds, and an increase in hæmoglobin, he regarded it as probably a case of polycythæmia rubra. The patient's liver and spleen showed no enlargement, and Wassermann was negative. The treatment recommended for polycythæmia rubra was venesection periodically, up to about 30 oz.

Hole in the Hyaloid.

Mr. LINDSAY REA showed a patient with this condition. The Wassermann was strongly positive, and after the proper antisyphilitic treatment, the bodies which had been in the vitreous began to clear. Sir William Lister had seen the case and confirmed the diagnosis.—Mr. TREACHER COLLINS agreed with the diagnosis. Clearly the vitreous had been torn away from the optic disc, and where that had happened a circular hole had been left.—Mr. GILBLETT mentioned two cases of similar kind which he had seen at the Ministry of Pensions, and in them the hole was four times as large as that in the present case.

Mr. REA also showed a case of neuro-retinitis with detachment of retina in which a septic oral focus was found, and on this being treated and the patient sent to the seaside vision greatly improved, and the retinæ were becoming re-attached.

Unusual Results of Operations for Cataract.

Mr. T. HARRISON BUTLER read an interesting paper in which he narrated a number of unexpected results after operations for cataract. In one case a serious hæmorrhage occurred when the preliminary iridectomy was done, and the patient's systolic blood pressure was found to be 200 mm. of mercury. In another case an exudate in the anterior part of the vitreous, possibly with some hæmorrhage, so simulated cataract that a preliminary iridectomy was done before the error was detected. Another case was one in which astigmatism after cataract extraction increased from 2·5 to 10, the only instance he had encountered in which the astigmatism had increased in this way. Several speakers commended Mr. Harrison Butler for relating these instructive cases.

The Treatment of Conical Cornea.

Mr. CHARLES KILLICK (Bradford) read a paper on this subject. He said he believed that keratoconus was not often seen in its earlier stages, but in strenuous work slight cases could easily be overlooked. Where doubt existed there should be a more frequent use of Placido's disc. His own experience of the condition had been when it presented a definite cone in each eye, when there was an opacity at the apex in one or both eyes, and when the vision was much reduced, usually below 6/60, though it might be improved to 6/24 by looking through a small aperture and by adding concave lenses. Sometimes unilateral cases were seen. One such developed suddenly in a lady, and did not vary over a period of several years. Death eventually was due to chronic tuberculosis. Treatment was almost always a question of surgical interference. Women were by far the more frequent sufferers from it. Of his six last cases, five were in women, including two pairs of sisters and a mental defect. This male was well developed and had never had good sight. He and one of the females had marked peripheral cataractous changes in both lenses. There seemed to be a tendency for it to occur in families. There had seldom been opportunities of microscopically examining eyes with keratoconus, but Parsons stated that Bowman's membrane was intact, but was thinned and wrinkled, Descemet's membrane being unchanged. Parsons gave the following main theories as to causation: relative increase of intra-ocular tension; malnutrition of the cornea, or inherent weakness of it; defective embryological development; disease of Descemet's membrane and epithelium. Ulceration or rupture of the cone had not been observed. The cornea was much thinned and might be reduced to one-third of the normal. The great difficulty was as to how to treat such an obstinate malady. The late Mr. Charles Wray said that in the early stages much might be done by general treatment, but the treatment laid down by him seemed too rigorous for hospital patients and required long rest for the eyes. In advanced cases, though general treatment could be added to the surgical, it could not be curative. In the case of the mental defect mentioned above Mr. Killick did not attempt surgery, therefore general treatment had to be carried out, and this resolved itself into the application of a firm pressure bandage and the administration of a tonic. This resulted in restoration of almost complete corneal transparency in a short time. He had seen the same result from it in other cases too. But it did nothing to bring about flattening. The chief

operative methods were cauterisation of the cornea, with or without its perforation, combined, if necessary, with optical iridectomy and tattooing, cauterisation combined with sclerectomy, excision of the apex of the cone, or extraction of the lens. He had had only a limited experience of Critchett's target operation. Terrien said that cauterisation without perforation had never yielded him good results. Mr. Killick quoted a case of his own in support of this, that of a nurse, whom he first saw in November, 1920. She was aged 24 and in good health, but her eyes had not been right for the past four years. Vision was bad, and she had well-marked conical cornea in both eyes. He did first a sclerectomy in the right eye to establish hypotony. It was followed by iritis, hypotony, and a small macula on the cone apex, which soon disappeared as the eye recovered. The eye healed without leaving any obvious sign of fistulisation, and the corneal condition was not altered, nor vision improved. She returned to work, but eight months later came back asking for a further operation, as she could not see to do her work efficiently. The right eye had less than 6/60 vision, and the left had 7·00–6/36. He then tried the effect of performing the first stage of cataract extraction, making a large flap, in the hope that a pressure bandage and post-operative astigmatism might produce a beneficial result, but was again disappointed. Altogether six operations were performed, and later she was admitted to a sanatorium with her sight little improved. The following case, however, seemed to show that something better could be done. It was that of a married woman, aged 49, who had conical cornea, but not so markedly as the last case. Her sight had been gradually failing for 12 years. She had never worn glasses. She had conical cornea in both eyes, with a small opacity on the apex of the right, and there were marked peripheral opacities in both lenses. Vision was less than 6/60, and was not improved by glasses. General treatment was first tried, but a year later there was no improvement. On account of the lenticular opacities, he decided on simple extraction by the method of the subconjunctival bridge; the width of this bridge should be about one-third of the total incision. A good recovery ensued, and she was discharged after nine days with a fair amount of after-cataract. Later she was readmitted for discission to be carried out, and he succeeded in making an incision in the capsule about 1 mm. broad and ½ cm. long in the vertical diameter. He described the procedure in detail. Vision was found to be improved, and the patient left the hospital in September last with a quite transparent cornea, and was wearing −5·00 D. sphere, together with −1·00 cyl. axis horizontal, with which she could manage to read 6/24.

The paper was discussed by the PRESIDENT and Mr. ELMORE BREWERTON. The latter described the operation he did for conical cornea, making his crucial incision through the apex of the cone. The wound healed in two or three days, some degree of flattening ensued, and the patient saw over the centre.

SECTION OF PATHOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 16th, Prof. J. C. G. LEDINGHAM, the President, being in the chair.

Dr. A. J. EAGLETON read a paper by Miss E. M. BAXTER and himself on the

Serological Classification of B. diphtheriæ.

Beginning with a historical introduction, Dr. Eagleton went on to describe the investigation, which he and Miss Baxter had carried out, of 346 strains of virulent *B. diphtheriæ*. The strains had been derived from a wide "catchment" area; 342 of the strains had fallen into one or other of ten clear-cut groups, and amongst the remaining 16, at least 4 serological varieties had been encountered. Dr. Eagleton did not maintain that strains examined by different observers in different areas would necessarily fall into the same ten types which he had found—on the contrary, he would rather expect to find a multiplicity of types in existence. Some evidence was brought forward of a structural similarity between strains belonging to the different types. It was hoped that work along these lines would prove of value to epidemiology in the future.

Prof. M. J. STEWART and Dr. J. LE FLEMING BURROW (Leeds) described and showed specimens from a case of

Malignant Spheno-Occipital Chordoma.

The patient was a man of 30, who, after three years' service in France, was invalided from the Army for "phosgene-gas poisoning." When admitted to hospital on Nov. 28th, 1921, he gave a three years' history of cough, headache, occasional vomiting, and unsteadiness in walking. A year before he had complained of failing vision, and was found to have optic atrophy, most marked on the left side. Recently he had complained of weakness in the legs and in the right arm. When examined on Nov. 30th he had blurring of speech, cyanosis, and laboured respirations, with dysarthria of paretic type. Examination of the cranial nerves revealed blindness and primary optic atrophy of the left eye, with early atrophy and diminution of the visual field on the right side. The left pupil was large and immobile. The left third, fourth, and sixth nerves were weak, but not completely paralysed, and the remaining cranial nerves appeared normal. He made considerable complaint of pain and stiffness in the neck, especially when the head was flexed on the chest, but while the cervical and upper dorsal vertebræ were held rigid, there was no tenderness on percussion or on palpation. The cerebro-spinal fluid was normal in all respects, but was under slightly increased pressure. The patient's progress was steadily and rapidly downwards. The paresis of the legs and right arm increased, and was followed by loss of power in the left arm. The respirations were laboured throughout and the patient finally died on Dec. 5th, apparently of respiratory failure.

Post-mortem examination revealed the presence of an irregularly nodulated ovoid tumour springing from the central area of the base of the skull. It was completely covered by dura mater and was not adherent to the brain. On its inferior aspect it had extensively infiltrated and destroyed the central portion of the base of the skull—viz., the clivus, pituitary fossa, and subjacent parts. It did not appear, however, to have invaded the naso-pharynx. The tumour had led to great stretching, flattening, and distorsion of the mid-brain, especially the pons and crura cerebri, the optic tracts and chiasma, and, generally, the structures forming the floor of the third ventricle. The pituitary gland had been completely displaced from its bed and was flattened out on the antero-superior aspect of the tumour. The naked-eye and microscopic characters of the growth conformed to those of chordoma. The tumour was gelatinous, transparent, and very friable, especially in its deeper parts. Microscopically it was alveolar in structure, being broken up into masses of various sizes by narrow bands of fibrous tissue which carry the blood-vessels. The alveolar masses were devoid of both vessels and stroma. They were composed of epithelial-like cells, spheroidal, ovoid, and polygonal, and everywhere mucoid degeneration was in progress. To begin with, small droplets of mucin appeared in the cytoplasm, and as the cell grew older these increased both in size and in number until the typical "physaliphorous" appearance is seen. The next stage in the evolution of the cell was that the mucin droplets were discharged and might either flow together, forming homogeneous or granular masses of varying size throughout the growth, or might simply form a vacuolated, almost fibrillated ground-work breaking up the tumour tissue into little groups of shrunken cells. Both the intra- and extra-cellular droplets gave the staining reactions of mucin (polychrome methylene-blue, thionin-blue, &c.)

Some 40 cases of chordoma of clinical interest were now on record, and were about equally divided between the two seats of election of this tumour, the spheno-occipital and sacro-coccygeal regions. The small hernial protrusions of notochordal tissue from the clivus, called by Virchow "ecchondrosis physalifora," were probably much more common than this but could hardly be regarded as genuine neoplasms. Two examples of this condition had been met with in 150 specially investigated post-mortems. Virchow wrongly regarded these nodules as cartilaginous, and his term was a misnomer. The condition would be more correctly designated "Ecchordosis physalifora."

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on Jan. 22nd, Lord DAWSON OF PENN, the President, being in the chair, when Dr. ROBERT KNOX introduced a discussion on the

CLINICAL RESULTS OF TREATMENT OF MALIGNANT DISEASE BY X RAYS.

He said that this form of treatment had not been sufficiently long in existence for any true estimate of its efficiency to be formed. It was known that different tissues reacted differently to radiation, and that non-malignant growths were more vulnerable than malignant, and sarcoma more amenable to treatment than carcinoma. German workers had introduced the practice of regulating the dose of radiation according to the type of tissue or growth to be treated, each tissue having its own "biological reaction." Employing as the standard (100 per cent.) the unit skin dose (a dose which under certain standard conditions would produce a definite skin reaction) they estimated the biological reaction at the following percentages: Unit skin dose, 100; castration dose, 30; sarcoma dose, 60–70; carcinoma dose, 90–110; intestinal dose, 135. It would appear from these figures that malignant diseases could all be cured by a suitable dose of radiation, but actually there were many other factors influencing tissue change, so that only in a small percentage of cases a beneficial reaction could be expected; yet the results already attained were encouraging. Constitutional reactions in the patient must be carefully looked for; in the skin, the blood, and in the excreta. The dangers of X ray treatment included burns, toxæmia from the breaking down of malignant tissues, and blood changes.

Importance of Accurate Diagnosis.

In an attempt to estimate the value of the treatment of malignant disease accurate diagnosis was essential, and in this respect the possibility of syphilis mimicking malignant disease must be borne in mind. Dr. Knox related the history of a case which was exhibited to the Society in which X ray treatment was given for a supposed malignant growth of the tonsil with secondary deposits in the glands of the neck. In spite of treatment the glands ulcerated, and the man was admitted to the hospital in a collapsed condition from hæmorrhage. Under treatment with potassium iodide very rapid improvement took place, and what had appeared to be a carcinomatous ulcer of the neck healed completely. Another case diagnosed as "malignant thyroid," which recovered under treatment, was evidently another example of an error in diagnosis.

Results in Various Types of Case.

Cases of true malignant disease were quoted —a sarcoma of the naso-pharynx made a remarkable temporary recovery, the primary growth and secondary glands in the neck both disappearing with great improvement in the general health. The inevitable recurrence occurred later, and the patient succumbed to the disease. A case of epithelioma of the tonsil and pharyngeal wall also cleared up after treatment with X rays and radium, and enjoyed two years of apparent freedom from disease before recurrence took place. Further treatment of this case produced remarkable sloughing of the tissues, ascribed by the speaker to the previous radium treatment. A case of sarcoma of the testicle operated upon two years before and almost moribund from secondary growths in the liver and upper abdomen recovered for a year under intensive treatment, and was able to resume his occupation before he succumbed. A patient who had an intrinsic carcinoma of the larynx, which was verified by section, and had responded well to treatment was exhibited. Carcinoma of the œsophagus treated with X rays and radium gave a temporary improvement. Carcinoma of the stomach did not respond well, nor did similar tumours of the colon and rectum.

Dangers of X Ray Treatment.

These cases were quoted in order to show that remarkable effects could be produced by X rays and radium; a large number of inoperable cases had received much benefit, although the percentage of cures was very small. So powerful an agent must on occasion do, and had in some of his cases done, considerable harm; skin burns of great severity had occurred and damage had been inflicted on the pleuræ and lungs. Deep radiations to the upper abdomen had been followed by severe symptoms out of all proportion to the dose given. He had therefore made a practice recently to give a small preliminary dose to ascertain the patient's reaction before giving the fuller doses now employed. It was a question whether it was not advisable to divide the large dose into six sittings with an interval of a day or two between each. This method was being tried at the Cancer Hospital and was giving satisfactory results. A malignant goitre treated on these lines at nine sittings spread over six weeks made very great improvement as regards ability to swallow and slept better, but developed symptoms thought to be due to thyroid insufficiency, for which thyroid extract was given. Intractable diarrhœa set in and she died in a week. At the autopsy the thyroid was found to be much reduced in size, and the secondary glands in the neck reduced apparently to tough fibrous tissue, but there were malignant deposits in the peritoneum and abdominal lymphatic glands.

The position of X ray therapy as a prophylactic agent after operation for cancer was well established. Dr. Knox quoted cases where recurrences after operation had been dealt with, and the patients kept alive and well for as long as 15 years.

The New and Older Methods.

The new method of massive doses had not been in use long enough to enable its ultimate results to be compared with those of the older form of radiation, which had given satisfactory results. The use of more penetrating rays and bigger dosage produced more rapid results, but was more uncomfortable and risky for the patients and could not be employed unless their general condition was good.

Dr. KNOX did not consider that X ray treatment could replace surgery, which should be the first recourse for operable cases, but thought that it formed a very useful adjuvant to surgical treatment of malignant disease and alone was very helpful in prolonging life and making it more comfortable in inoperable cases. He concluded by exhibiting a number of lantern-slides showing the results and complications of this treatment.

DISCUSSION.

Mr. SAMPSON HANDLEY described the results of X ray treatment in a few cases. A sarcoma of the umbilicus was apparently cured by X rays, but the large burn left had to be treated surgically. He was grateful to the radiologists for their willingness to treat and ability to help hopelessly inoperable cases of malignant disease, and described two cases of this kind which derived much benefit from the "Erlangen" form of treatment.

Importance of Patient's General Condition.

Dr. REGINALD MORTON had devoted himself exclusively to this branch of radiology for two years, but

could not yet express any definite claims for X ray treatment; 95 per cent. of the cases he treated were hopeless cases from the surgical standpoint with extensive secondary deposits, so that very few cures could be expected. Further, in cases apparently more hopeful, the most careful examination could not always detect secondary deposits at a distance from the primary growth. The modern treatment required the collaboration of nature in dealing with the malignant deposits after they had been devitalised by ray treatment, so that it was of the utmost importance that the patient's general condition should be good at the time of the radiation. The presence of sepsis in the growth he considered a definite contra-indication to this form of treatment. He believed that when conditions were favourable a full dose at one sitting was more beneficial than repeated fractional doses. As regards results, he wished to say that the extravagant claims made for this form of treatment were not made by those responsible for its execution, who were nevertheless satisfied with the results already obtained and hoped for further improvements from better technique. Already they had almost overcome the danger of X ray burns of any severity by using several ports of entry where a massive deep dose was required. The fall in the red blood cell count after treatment in two cases averaged about 5 per cent. only, and the new technique had resulted in a lessened incidence of vomiting, which was never severe now.

Relative Vulnerability of Cancer and Normal Cell.

Mr. P. LOCKHART-MUMMERY pointed out that the cancer cell was a very little more vulnerable to poisons than the normal cell, and thus it came about that occasional cases of the cure of cancer by drugs such as arsenic had been reported; these cases were favourable in the sense that while the normal cells had a high tolerance to the drug in that individual the cancer cells must have been vulnerable. The margin of difference was very small, however, both for poisons and physical agents such as X rays, so that any treatment designed to kill a cancer must come near the point of killing the normal tissues. His experience of the modern X ray treatment was limited to a few cases, but of these one died and two had very severe burns as the result.

Dr. GILBERT SCOTT maintained that cases should not be assessed as cures or failures, but that much was done by X rays as palliative treatment. The technique usually aimed at destruction of the primary tumour and neglected the various channels of dissemination. When giving prophylactive treatment after operation for cancer of the breast, for instance, he exposed large areas of the front and back of the trunk to radiation. Much remained to be worked out yet, such as the variation in response in different persons and the late reactions.

Dr. DOUGLAS WEBSTER said that X ray treatment had two aims, curative and prophylactic, and attained its greatest success in the latter, and especially in the case of superficial growths. The common causes of failure were insufficient extent of exposure, too small dosage, and inadequate observation after treatment. Prophylactic treatment after operation for cancer of the breast was not universally thought to be helpful; in some parts of Germany, for instance, it was considered to have made the results worse.

Mr. GORDON TAYLOR was a believer in prophylactic X ray treatment; all his cases of breast cancer received such treatment. He had been disappointed with the results of the temporary implantation for a few hours of small doses of radium in the wounds of operation for cancer of the breast, as it had appeared to cause severe shock, in one case fatal.

Dr. J. E. A. LYNHAM had seen severe sickness and violent reactions follow the treatment at Erlangen, and therefore decided to adopt the fractional method in his work with Dr. Knox at the Cancer Hospital, and this method had yielded results at least as satisfactory with less risk and discomfort to the patient. He had remarked that cases which were going to do well began to look and feel better within a few days. The effects of X rays were shared by the surrounding cells and the individual as well as by the tumour itself, and on the degree to which the reaction of the surrounding cells were stimulated to fibrosis the results largely depended. He believed in prophylactic treatment, but thought it should be deferred until six to eight weeks after operation.

Dr. KNOX, in reply, said that much of the advertisement of the "Erlangen treatment" was due to the manufacturers of apparatus and the lay press. He had never known severe shock follow the small dosage of radium used by Mr. Gordon Taylor.

MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held at 11, Chandos-street, London, W., on Jan. 16th. In the absence of the President, Earl RUSSELL was in the chair.

Prof. HARVEY LITTLEJOHN delivered a note on the

Microspectroscope in the Detection of Blood.

He said that in legal cases many tests of stains suspected of being blood were employed. These included the microscopic examination for red corpuscles and the hæmin test, but none provided so delicate a test as the microspectroscope; yet the use of this instrument was not described in the books on forensic medicine. If the suspected stain were on clothing a single strand of the material bearing a minute fragment of the stain was moistened and focussed under the microscope and the spectroscopic attachment then fitted. The characteristic two absorption bands of oxy-hæmoglobin would then be seen if the stain were blood; if any doubt existed the bands could be compared with those of a solution of fresh blood. Further confirmation could be obtained by reducing with ammonium sulphide and observing the spectrum of hæmoglobin; the spectrum of hæmochromogen could then be obtained by treating with potassium hydroxide. The results could be again confirmed by similar treatment of the fresh blood solution. A very old stain would give the spectrum of methæmoglobin. Prof. Littlejohn pointed out that these tests were extraordinarily delicate—the spectrum of hæmochromogen, for example, could be obtained from a crystal only visible under moderate power of the microscope. Even when the blood had been destroyed by heat it was still possible to obtain the spectrum of alkaline and acid hæmatoporphyrin. The only disadvantage of the test was the cost of the microspectroscope, which was considerable. A moderately efficient substitute could be contrived by replacing the eye-piece of a microscope by a small spectroscope, such as was used in the physiology class. The speaker had found it possible to mount and preserve slides of the various pigments for purposes of comparison, some of which were exhibited under the microspectroscope.

Sir WILLIAM WILLCOX agreed as to the value of the instrument in medico-legal practice. The microscopic detection of red blood cells was exceedingly difficult in an old stain and the hæmin test required a fragment of dried blood for its easy performance. He added that the instrument could be used for the detection of blood-pigments in solution, but it was impossible to determine from its use alone that the blood was human or even mammalian.

Mr. J. WEBSTER referred to the poor solubility of old stains in which only two spectra were obtainable. He thought that the hæmin test should always be employed; for the success of this test the acetic acid used must be truly glacial.

Exhibition of Specimens.

Dr. T. H. G. SHORE exhibited the heart of a woman of 28 years who had called in a doctor on account of pain in the chest. Beyond the fact that she was five months pregnant the doctor could not discover anything, but the post-mortem revealed a rupture of the aorta through which blood had passed by dissecting between the coats into the pericardium. From the fact that this severe lesion had occurred so early in life he suspected syphilis. He also exhibited the kidney of a sailor who died within an hour of sustaining a burn from the breaking

of a bottle of lysol which he was carrying in a trouser pocket.[1] The organ was swollen and intensely engorged. A third specimen was the scalp of a girl completely avulsed from eyebrows to nape of neck by revolving machinery. The girl was still alive and he was considering the possibility of tanning the scalp for use later as a wig.

Prof. LITTLEJOHN had seen specimens of rupture of the aorta, but none showing the transverse tear in the specimen exhibited, which was very unusual. He thought it would be possible to make an efficient wig from the scalp shown, as one had been preserved for 50 years in his museum and the hair was now only slightly bleached.

Dr. M. I. FINUCANE inquired on what grounds death was attributed to lysol poisoning in the case from which the kidney was obtained.

Dr. SHORE replied that there was no previous evidence of kidney disease and that the mode of death was typical of lysol poisoning.

Sir WILLIAM WILLCOX pointed out that many persons showed intolerance to carbolic acid; he had seen carboluria from 1 per cent. carbolic acid fomentations. The basis of lysol was carbolic acid, and it also contained an alkali which would increase the rate of absorption through the skin, so that there was no difficulty in explaining the rapid death in Dr. Shore's case.

Sir BERNARD SPILSBURY showed the skull of a woman in which there were five fractures due to blows from a blunt instrument, two of them showing impressions corresponding with the pattern of the head of the poker with which they were inflicted. Another specimen was a slice of liver of a woman who had been addicted to alcohol for many years; the organ was much enlarged and showed extensive fatty infiltration. A microscopic preparation stained for fat showed the most extreme fatty change.

Sir WILLIAM WILLCOX said that the liver exhibited showed that alcohol could on occasions act as a very powerful liver poison, producing the symptoms of deficient liver function and persistent vomiting. In one such case the discovery of arsenic in the urine had led to the suspicion of foul play until the speaker had analysed the organs and found no arsenic; the changes in the liver in this case were also due to alcoholism.

Sir BERNARD SPILSBURY said that death was not due to acute liver poisoning in this case, but to exposure from falling out of bed while under the influence of alcohol.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Jan. 4th, Mr. A. J. HUTCHISON, the President, being in the chair, when Dr. H. T. CUBBON read a paper on the

Use of Diathermy in Surgery.

He gave a general outline of the physical effects produced by the passage of the diathermy current through the body, with special reference to the destruction of morbid tissue by the heat produced. Specimens of meat were shown in order to demonstrate this.

The advantages of diathermy over ordinary surgery were discussed under the following headings: 1. Lack of primary hæmorrhage. 2. Absence of shock. 3. Absence of pain and the relief of pain in palliative operation. 4. Diminished risk of cell-implantation. 5. Sterilisation of the parts operated upon by the heat produced. 6. The scar resulting from diathermy is firmer, denser, and more pliable than the ordinary scar, with less tendency towards breaking down. 7. As the method of choice in patients too old or feeble for operation by other methods. 8. The patient is more willing to undergo further applications should they be necessary than he would be to submit to further cutting operations. This is due to the simplicity of the operation and the few after-effects. 9. Rapid convalescence. The complications which might arise after diathermy operations included œdema and risk of obstruction in laryngeal operations and the risk of secondary hæmorrhage.

Dr. Cubbon held that there was a wide field in which diathermy was capable of application. Practically all cases of malignant disease involving the tongue, the floor of the mouth, palate, fauces, and certain parts of the pharynx, vagina, and vulva are suitable for diathermy. He also held that diathermy would be found to be an excellent method of destruction in many cases of non-malignant disease where destruction of tissue was desirable. Fibromata of the naso-pharynx, papillomata of the bladder, cavernous nævi of the tongue, lips, pharynx, and buccal mucous membrane were cited as non-malignant pathological conditions which could be destroyed by diathermy with excellent results. He said that warts and small pigmented areas of skin could be effectively destroyed by diathermy sparks; strictly speaking, this was not diathermy, but the sparks produced by the diathermy auto-condensation method were so much less painful than the older high-frequency sparking that very often tissue could be destroyed without the use of a general anæsthetic.

Most of the cases of malignant disease which had been operated upon by diathermy were those which had been considered inoperable from the ordinary surgical standpoint. These cases had been naturally far advanced and cures could not be expected, but in spite of that the results had been distinctly encouraging. In operating on all early cases of malignant disease of the mouth and upper air-passages diathermy should be considered the method of choice, in view of the advantages which it possesses. Diathermy was no more a specific for the cure of malignant disease than surgery, but he was convinced that a combination of the two would be a tremendous help to the surgeon, and that diathermy in the future will be the most efficient way of dealing with malignant disease in the early stages, in certain parts of the human body.

Mr. M. FITZMAURICE-KELLY showed four cases, all of which had been successfully treated by diathermy by Dr. Cubbon and himself.

Mr. ROBERT SANDERSON read notes of a case of Subinvolution of the Uterus and of a case of Malignant Annular Stricture of the Colon.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.

A MEETING of the London Association of the Medical Women's Federation was held at the Elizabeth Garrett Anderson Hospital on Jan. 15th, Dr. LOUISA MARTINDALE, the President, being in the chair, when Dr. ESTELLE COLE read a paper entitled

The Psychology of Freud and its Application.

She defined certain basic ideas of the Freudian psychology and the use of the terms "conscious," "preconscious," and "unconscious," and spoke of the biologic, non-moral aims of the individual which are expressions of the unconscious. These aims are at war with the morality of civilised society and so are repressed, the continual warfare between "I want to" and "I must not" giving rise to what is called a conflict. The speaker emphasised the Freudian doctrine of psychical determinism or the causal determination of ideas and symptoms. Stress was laid on the wide interpretation of the term sexual, which has been introduced by Prof. Freud, and a description of the Œdipus complex was given. Complexes are, in Freud's opinion, at the root of all or nearly all neuroses. She described the dream as the preserver of sleep, and showed that the pictorial representation or symbolism of the dream is not the confused jumble that it appears on superficial examination. The Freudian method of analysis, leading to abreaction, was then described, and a list of abnormal conditions known to have been benefited by analysis was given. Notes of a case of neurasthenia with anxiety neurosis, which was cured by the method, were detailed.

[1] Full details of a fatal case of absorption of carbolic acid through the skin were recorded by Dr. W. R. M. Turtle and Dr. T. Dolan in THE LANCET of Dec. 16th, 1922.

Reviews and Notices of Books.

CLINICAL TUBERCULOSIS.

Vol. I.: Pathological Anatomy, Pathological Physiology, Diagnosis, and Prognosis. Vol. II.: Complications and Treatment. Second edition. By FRANCIS M. POTTENGER, A.M., M.D., LL.D. With a chapter on Laboratory Methods by JOSEPH E. POTTENGER, A.B., M.D. London: Henry Kimpton. 1922. With 105 text illustrations and charts, and 6 plates in colours in Vol. I.; and 65 text illustrations and charts, and 4 plates in colours in Vol. II. Pp. 707 and 725. £3 15*s*.

A CLUE to the spirit in which this work is conceived and written is to be found in its dedication to Sir James Mackenzie, Ludolf Krehl, and George W. Crile. The author has not been satisfied with the dogmatic statements of the average text-book, but has tried to explain the reasons underlying his views and to teach treatment from a physiological standpoint. This is perhaps the ambition of most writers of scientific works on medicine, but it is rare to find it as fully realised as it has been in this case. When, for example, the author discusses the blood pressure in tuberculosis, he is not satisfied with the bald statement that the blood pressure is low in tuberculosis; he debates at considerable length the various factors concerned with the maintenance of blood pressure in health, and shows why and how digitalis may be employed in combating this effect in tuberculosis. Naturally, in so large a work there must be parts with which the author's fellow specialists will not agree, but opposition and criticism become inevitably softened by the author's facile and eloquent method of exposition, and by his conscientious discussion of the observations which have given rise to the faith which is in him. His essay on graduated exercise is prefaced by the all too evident truth that ". . . . injudicious exercise or exercise at a time when it should have been avoided has been responsible for the death of more tuberculous patients than any other measure." With regard to the dangerous symptoms which may follow even graduated exercise, he thinks that some of them, such as slight rises of temperature and headaches, may be due rather to storing up of lactic acid in the system than to increased auto-inoculation of tuberculin. The success of graduated exercise must at any rate depend primarily on the person who supervises it. The author takes the same sensible line with regard to sanatorium treatment. Sanatoriums may, indeed, ". . . . stand as monuments, silently teaching the principles of regulated living in the open air," but the sanatorium is, after all, only an instrument for carrying out the ideas of the chief medical officer on whose personality everything hinges.

It cannot be honestly said that all the important advances made since the publication of the first edition reviewed in THE LANCET (1917, ii., p. 607) have been incorporated in the present edition. To be sure, a new chapter has been added on the relation of influenza to tuberculosis, but practically no attempt has been made to digest the recent literature of this particular subject. His personal experiences have convinced the author that influenza not only stirs latent tuberculosis into activity, but also gives a rapidly progressive character to the disease in many cases. The value of the chapters on treatment varies greatly. The author combines advocacy of tuberculin with sobriety of judgment, and the many pages devoted to this subject are well worth studying. With regard to the mechanical treatment of pulmonary tuberculosis by such measures as artificial pneumothorax and thoracoplastic operations this book is disappointing. It is difficult to estimate the author's knowledge of the latter, for he does not even mention them, and his discussion of artificial pneumothorax betrays considerable ignorance. A useful feature is the inclusion of more than a hundred pages of case-notes. Notes on individual cases are usually dull, but these are chosen so judiciously, and edited with such care that they give a maximum of instruction with a minimum of boredom. Incidentally, they impress the reader with the importance attached by the author to inspection and palpation which may alone provide the clinician with adequate data for an accurate diagnosis.

As we have suggested, there is a good deal of recent knowledge about tuberculosis which is not even referred to in either of these volumes, each of which weighs about four pounds, but it is doubtful if any other single work on tuberculosis contains so much useful information. The time seems to have passed when knowledge of tuberculosis was so limited that it could be satisfactorily condensed by one man into one book.

PROGNOSIS.

An Index of Prognosis and End-Results of Treatment. Third edition, revised and enlarged. By Various Writers. Edited by A. RENDLE SHORT, M.D., B.S., B.Sc. Lond., F.R.C.S. Eng. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd.; Bristol: John Wright and Sons, Ltd. 1922. Pp. 594. 42*s*.

THIS index forms a valuable addition to the meagre literature on the subject of prognosis; the present edition, the third since 1915, has been brought well up to date. The section on venereal diseases has been rewritten by Colonel L. W. Harrison, that on gynæcology by Mr. Eardley Holland. A new section on ophthalmology has been contributed by Mr. Arthur D. Griffith. The valuable monograph by the late Sir Thomas Clouston, which was addressed to the old classification of mental disease, has been retained unaltered, for it is considered that there is insufficient data for discussing prognosis under the new nomenclature. The contributors have done a vast amount of work and taken great trouble to produce as complete a reference to the end-results of treatment as is possible, and the practitioner will find the volume a valuable aid in an important and difficult branch of medicine.

Allgemeine Prognostik. Second and enlarged edition. By Prof. T. BRUGSCH. Berlin and Vienna: Urban and Schwarzenberg. 1922. Pp. 623. M.3240.

THE first edition of this book, which consists of an account of our knowledge of individual constitution, was reviewed in THE LANCET three years ago.[1] The changes in the second edition are the result of further work on the subject. There is a general expansion, with the modification of the term "constitution" in the direction of that of "personality"; also we find added a discussion of psychical characteristics, of morbid heredity, and of E. Kretschmer's book on the correlation of personality with bodily conformation. An index has been provided. It remains a book for the philosophic general physician; the specialist will be independent of it. A protest may be entered against any more space being wasted in medical works on expositions of the elements of the Mendelian theory, for such are now obtainable in many easily accessible sources.

PERSONAL HYGIENE APPLIED.

By JESSE FEIRING WILLIAMS, A.B., M.D., Associate Professor of Physical Education, Teacher's College, Columbia University. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 412. 12*s*.

THIS philosophic and high-minded book is written for college students, and all students should be encouraged to read it. It aims at improving the quality of human life by indicating what in life is worth while and what is not. A kindly optimism emanates from the whole book, and makes its reading a pleasure and an inspiration. The author is especially interest-

[1] THE LANCET, 1919, ii., 788.

ing where he deals with quackery in all its branches. He feels too keenly about this subject to pretend it is not a serious menace. The honest and outspoken attitude adopted by the author with regard to anti-vivisection, antivaccination, food-fads, patent medicines, occultism, osteopathy, chiropractics, Christian Science, and nostrums of all sorts, physical, mental, or moral, can do nothing but good. We praise his sense, admire his courage, and recommend his book to those numerous amateurs of medical knowledge whose refrain it is that the medical profession does little to warn them against the quack in his many disguises. We heartily congratulate the author on breaking away from the traditional text-book.

PRÉCIS DE PATHOLOGIE MÉDICALE.

By M. JOURNÉ. Paris: A. Maloine et Fils. 1923. Pp. 1269. Fr.25.

THE title of the chair of "Internal Pathology" in the Faculty of Medicine was altered to "Medical Pathology" early in 1922. The subject-matter, however, remains the same and the present book would in this country be called a short text-book of medicine. It is a colourless compilation that will be of little value to English medical students, and it would be unfair to take it as representing the present state of medical knowledge in France. Anthracosis is described as the only pneumonokoniosis of importance; cancer is included under parasitic diseases; the page and a third devoted to the physiology of the lung are, with the exception of three and a half lines, occupied with an account of its supposed action in dealing with fats; mountain sickness is said to be caused mechanically by the lowered pressure producing a pulmonary congestion which overloads the right heart. Though this book was issued in November, 1922, the title page is dated "1923"—perhaps in the hope that these ideas may by the next year have become accepted truths.

SURGICAL DIAGNOSIS.

By H. C. ROMANIS, M.A., M.B., M.C. Cantab., F.R.C.S. Eng., Assistant Surgeon to St. Thomas's Hospital, Surgeon to the City of London Hospital for Diseases of the Chest. London: J. and A. Churchill. 1923. Pp. 302. 8*s*. 6*d*.

THIS little book is a condensed compilation of the teaching to be found in the best standard text-books of surgery. It treats only of diagnosis. It is readable, of convenient size for the pocket, and should be useful to the student in his ward and out-patient work.

HÆMOGLOBINOPHILIC BACTERIA.

Investigations into the Occurrence and Classification of the Hæmoglobinophilic Bacteria. By MARTIN KRISTENSEN, Chief of Department at the State Serum Institute, Copenhagen. Copenhagen: Levin and Munksgaard. 1922. Pp. 272.

THE author of this extensive monograph—the most comprehensive survey of the Pfeiffer group of bacteria which we have yet seen—is to be congratulated. It is the work of an expert bacteriologist, who sedulously chronicles his failures and doubts as well as his positive findings and sure results, and it will amply repay study on the part of all workers in bacteriology. The book consists of two parts: the first being a sound and critical review of existing publications on Pfeiffer's bacillus; indifferent work is not allowed unduly to encumber the author's argument for the sake of mere bibliographical completeness. This section closes with a summary of the question of the ætiological significance of the organism. The author stresses the lack of any constant pandemic type of organism through its wide prevalence in cases of the disease. The strains isolated, when critically examined, prove to vary so much, morphologically, biologically, and serologically, although within the limits of the group, that he considers it improbable that such diverse strains can be the causal agents of a single epidemic. From the evidence examined he concludes that "on the basis of what is already known about the occurrence of Pfeiffer's bacillus, it is reasonable to conclude that it is not the primary influenza microbe."

In the second half of the book the author describes his own work. He does not bring forward much that is actually new, but his numerous observations on a multitude of points are of great value in view of the large number of strains which he has examined. In the last chapter a comparison of Pfeiffer's bacillus, with other allied forms, gives a good deal of information which could not be obtained elsewhere without the examination of a very large amount of literature.

It is no small compliment to the status of bacteriology in the English-speaking races that such a monograph, published in Copenhagen and emanating from a Danish laboratory, should be printed in English, and we congratulate the author and publishers on its production.

EVOLUTION OF PUBLIC HEALTH NURSING.

By ANNIE M. BRAINARD. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 454. 15*s*.

To record the history of public health or district nursing is to chart a series of efforts made by nurses, doctors, and philanthropic and public bodies from the time pity first aroused the desire to alleviate human suffering. Miss Brainard has had a wide field to cover. There was organised visiting of the sick under the Roman Empire; the Primitive Church established an order of Deaconesses; and the development of public health nursing to the stage when care of the sick in their homes is becoming a responsibility assumed by the community is admirably traced. Many failures to-day are attributable to ignorance of the past, and for this reason alone this book should be widely read. Miss Brainard has endeavoured to incorporate in her book the outstanding movements of international importance, which contributed by their influence to build up our modern methods of district and public health nursing. An interesting chapter on Kaiserwerth and the English Sisters reveals the part played by England, Belgium, Germany, France, and Switzerland in the attempt to organise a system of visiting nurses. This system is likely to develop still further in view of the shortage of housing accommodation, which makes even the middle-class public reluctant to import a resident nurse into a congested household.

The issue of the Visiting Nurses Directory (London: Scientific Press, Ltd. 1923. 9*d*.), to which we have already called attention, should facilitate the employment of visiting nurses by paying patients.

THE GOLD HEADED CANE.

By WILLIAM MACMICHAEL, M.D. A new edition, with an Introduction and Annotations by GEORGE C. PEACHEY, Author of "The History of St. George's Hospital." London: Henry Kimpton. 1923. Pp. 195. 18*s*.

As recently as Nov. 4th, 1922, we had occasion to review an edition of this medical classic published by the Oxford University Press containing an introduction by Sir William Osler. There is therefore nothing further to say about the text of the book now before us, but we can state that the introduction and the notes by Mr. Peachey are illuminating, though here and there we cannot see eye to eye with him. Thus, when he says on p. 4 that "the vaunted salubrity of Knightsbridge is perpetuated to the present time in the place-names of Constitution Hill and Montpelier Square," it seems to us that imagination has outrun discretion; again, on p. 30, when he remarks, "the Radcliffe Library, which is perhaps the most beautiful building in Oxford, . . ." the reader who knows Oxford will remember Magdalen College and the Divinity School. However, these are but matters of opinion, and we can thank Mr. Peachey without reserve for his annotations on ascertained facts.

VERTEBRATE DEVELOPMENT.

Lehrbuch der Entwicklungsgeschichte. Second edition. By Prof. Dr. HERMANN TRIEPEL, Breslau. Leipzig: Georg Thieme. 1922. Pp. 211. 9*s.* 6*d.*

THIS book aims at giving the reader an account of vertebrate development. It is a student's text-book of small compass, and does not enter into questions of theoretical interest, but, as in other works of a like kind, dogmatic statements have to take the place, occasionally, of the qualified views which the author might have expressed with more space at his disposal. This apart, Prof. Triepel has written clear, short, and interesting accounts of the various aspects of his subject, extending from the sex-cells, through segmentation and gastrulation to the development of organs, and has managed to compress a great deal of information into his small volume. Presenting the German point of view, he does not always see eye to eye with our embryologists, but the work is nevertheless one which can be heartily recommended to those who wish to gain acquaintance with the general field of embryology of vertebrates in a reasonable compass. There are 173 clear figures in the text, but more use might have been made of explanatory diagrams. The book is well and clearly printed.

HERBALS.

Old English Herbals. By ELEANOUR SINCLAIR ROHDE. London: Longmans, Green and Co. 1922. Pp. 243. 21*s.*

THERE will always be certain medical interest attaching to herbals, though the medical side is not developed in this book further than is implied by the inclusion of many notes on folk-medicine and references to popular beliefs in herbalism. Yet the whole story of herbals is covered, the historical arrangement allowing us to get a comprehensive view of the subject. The coloured frontispiece is a reproduction of an illustration contained in a twelfth-century transcript, and represents the digging up of herbs for medical purposes under the direction of a medicine-man or sage, the original being the Herbarium of Apuleius. The manuscript is in the possession of Eton College. Various chapters deal with herbals written in connexion with the colonisation of America by Spain and later by England, and here we find certain records of Red Indian plant-lore and learn also that many of our home weeds were introduced into America by the first colonists. The common complaint of gardeners, and especially of woodmen, is, of course, that American plants of inconvenient exuberance have been brought by returning colonists back into this country. It is interesting to note that tobacco was used by Red Indians not only in their religious ceremonies but as a medicine, and for a time the herb was believed to have a therapeutic value by our physicians, while surgeons employed it by enemas as an anæsthetic.

There is some dangerous material in this book for the imaginative charlatan. The oldest Saxon book dealing with the virtues of herbs (A.D. 950) is the Leech Book of Bald, the manuscript of which, from the fact that it was sheltered in Glastonbury, is to-day as good as when it passed from the hands of a loving scribe, who is reported to have been the personal friend of King Alfred. This book of 109 leaves has been described by one of our most learned medical historians, the late Dr. J. F. Payne, as "the first medical treatise written in Western Europe. . . . the embryo of modern English medicine." The book, which is not a treatise on baldness, contains receipts for that condition, for sunburn, and other cosmetic defects, for mistiness of the eyes, for the "flying venom," which appears to have been a phrase covering mysterious infections, for nocturnal visions, and for "water elf disease"—a very terrible visitation. Many of the remedies consist of infusions of common British plants such as yew, lupin, mallow, elder, strawberry, camomile, plantain, and dock, though in one case the herb which is directed for use must have been difficult to obtain; the prescription is protective against snake-bite, the direction being "if the man procures and eateth rind which cometh out of Paradise, no venom will hurt him." It is added: "Then said he that wrote this book that the rind was hard gotten."

We congratulate the author on an interesting volume, to whose production the publishers have given every care.

Précis de Phytothérapie. By HENRY LECLERC. Paris: Masson et Cie. 1922. Pp. 300. Fr.12.

IN these days of synthetic drugs, in which few galenicals remain and in which the active principles of these are known and may, any day, be manufactured artificially, it is refreshing to read a whole-hearted though well-balanced defence of the plant drugs of our ancestors. The limitation defined in the sub-title "Essais de thérapeutique par les plantes Françaises" brings us still nearer to our forefathers by cutting out recent tropical acquisitions. Without doubt in dropping many useless preparations we have in modern medicine let slip some useful ones. In France, where tisanes still hold sway and where the countryside is scoured for herbs to a greater extent than in England, this book approaches the position of a practical prescription book more nearly than it does with us. To us it is one of old time herbals brought up to date and with modern explanations where such explanations are possible. To the practitioner who knows his botany and who lives in the country it may well afford some interesting material for experiment.

New Inventions.

AN APPARATUS FOR COLLECTING URINE FROM FEMALE INFANTS.

THIS apparatus was designed to overcome the difficulties in collecting specimens of urine from small female infants. It was first used in the special ward for the investigation of infantile diarrhœa at the Children's Hospital, Great Ormond-street, and is now in use in the Children's Ward at Guy's Hospital and at the Infants Hospital, Westminster. It is most efficient in babies too young to sit up—the urine, however, being collected equally effectively in whatever position the child may be lying. The apparatus consists of a vulval pad or ring, oval in shape, which closely fits the perineum. From the vulval pad inferiorly hangs a conical bag, with a screw tap at the apex, and by its use single or 24-hour specimens of urine may be collected. It is comfortable, easily and rapidly applied, readily sterilisable either by boiling or, preferably, in 1 in 20 carbolic solution. It is washable. In cases of pyelitis it is extremely useful, in that the bag may be emptied through the screw tap without removing the pad. The variation in alkalinity or pus contained in the urine may be closely observed. The appliance may be used with even greater facility on male infants. In view of the simplicity of this apparatus, it can be applied by an intelligent mother, and we hope that it will prove as useful to general practitioners as it is under hospital conditions.

The apparatus is made by Messrs. Allen and Hanburys, 48, Wigmore-street, London, W. 1.

DONALD PATERSON, M.B. Edin., M.R.C.P. Lond.
E. A. LEVISEUR, M.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JANUARY 27, 1923.

THE RELATION BETWEEN THERAPEUTICS AND PHARMACOLOGY.

A CERTAIN over-trustfulness among practitioners, shown by a willingness to attribute peculiar virtue to remedies the administration of which has been followed by recovery among their patients, was the subject of attack at a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine reported last week in THE LANCET. A vehement endorsement of the criticisms, appearing in our correspondence columns, suggests that the relation of therapeutics to pharmacology, which is by no means so intimate as the union of these two branches of medicine into one section of a society would imply, needs serious readjustment. The art of therapeutics has remained considerably an art, too many of its principles being without sure scientific foundation, though the position has been vastly improved in recent times, and the best workers in this sphere of medicine are giving it grave attention. But the plight in which the practitioner may find himself is still somewhat comparable to that of a navigator before the science of astronomy was well advanced. He has to trust largely to his own ingenuity and his own interpretation of particular problems in many perilous situations. The medical profession wants a record of his experiences. Alas, the practitioner, with an over-full day, does not appear to realise that only the most careful records of cases that have been followed up, and collated with their similars, can advance the art of therapeutics on its scientific side. The progress of the sciences on which therapeutics must eventually be founded is dependent on the coöperation of the man who uses the weapons provided against disease. Over-eagerness to accept as efficacious preparations announced as physiological remedies may hamper that progress. In the course of the discussion at the Section of the Royal Society of Medicine it was said that organotherapy lags considerably behind endocrinology; would it not have been more correct to say that organotherapy has been exploited so far beyond what is justified by our present knowledge of endocrinology, that professors of the latter branch of science are driven to repudiate their own child?

It is not only in organotherapy, however, that the lack of coöperation between clinician and pharmacologist is evident. It was recently pointed out that the most popular official preparation of ergot in this country is one in which pharmacologists can find little, if any, active principle. Practitioners find it easier to credit anonymous pamphlets than to accept the view of physiologists that much of the activity which colloidal preparations of metals or other powerful drugs can possess may be attributable to the fraction present in true solution or to a protective substance added to ensure stability.[1]

If pharmacology and therapeutics were not mutually dependent, the lack of confidence between workers in either field would not be so serious. But, as Prof. A. G. CLARK points out in the preface to a little book[2] expressly designed to bridge the gap between them, experiments upon laboratory animals usually show more or less the immediate effect of a toxic dose of a drug upon a healthy animal, whereas clinical medicine is concerned with the effects produced by therapeutic doses of drugs upon diseased human beings; such effects are usually produced only after many hours or days. Thus information derived from laboratory experiments requires to be controlled and extended by clinical observation. The question remains as to how a better understanding between groups of workers whose outlook and responsibilities differ so widely is to be achieved. We agree, and all will agree, with much that our correspondent, "A Physician," writes, but demur to his reproach of the clinician who lacks "the courage to use controls." It is more a question of temperament and of a conception of duty to each individual patient. To withhold treatment which he believes to be efficacious from 20 patients, whether suffering from intractable varicose ulcer or from syphilis, while he administers it in 20 parallel cases can hardly be regarded as a duty by a professional man who is treating patients, not conducting experiments. The attitude may be unscientific, but it cannot be condemned, unless, despite the absence of controls, results are published claiming to be conclusive. Even should controls be adequate, there are other variables which may easily vitiate clinical evidence. The typical impartial scientific observer is not popular or successful with patients, while the practitioner can hardly gauge the value of his own sanguine temperament. It is natural enough that laboratory workers who keenly desire to have their experimental conclusions tested in the sick room should be dissatisfied with the results, unclassified, uncontrolled, and insufficiently documented, which may emanate therefrom. But can they devise means whereby the action of a drug in clinical practice can be actually measured? The electrocardiogram is an example of such an instrument, and another designed to record the contractions of the uterus is being tried at Queen Charlotte's Hospital. Hitherto the clinician has not received sufficient consideration in a dual rôle; we are convinced that if his difficulties are recognised by his scientific colleagues attempts will be made towards the solution of joint problems in pharmacology and therapeutics which would soon have speedy results.

[1] The Colloidal State in its Medical and Physiological Aspects. By Sir William Bayliss. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. 6s. Also THE LANCET, 1922, i., 40.

THE PUBLIC AND TUBERCULOSIS RESEARCH.

SCEPTICISM and modesty are the attributes of mind most conducive to useful research. It was WILLIAM HARVEY who counselled his fellows not to rely only on other men's traditions in the wonderful field of nature, where, he added, performance exceeds what is promised. "Nature her selfe must be our adviser; the path she chalks must be our walk. . . ." We note that the address by Prof. LYLE CUMMINS, printed at the front of our present issue, is frankly interrogatory. Instead of saying that what we "know not is not knowledge," he says: "Does what we know of tuberculosis deserve the name of knowledge?" Coupled with his call for research is the query, very pertinent in these days, whether every

[2] Applied Pharmacology. London: J. and A. Churchill. 1923. 15s.

advance, real or illusory, should be published broadcast, as knowledge for the benefit of the public. The chief objection to this course is that apparent "advances" are often illusory; it is only necessary to consult an old edition of any popular work on therapeutics to realise how ephemeral some of these therapeutic "advances" have been. The treatment of tuberculosis of the larynx is a case in point. Less than a generation ago the tuberculous larynx was subjected to paintings with lactic acid and burnings with the electrocautery, on the assumption that the root of the patient's disease was being tackled. Now that we have come to regard tuberculosis of the larynx as an offshoot of a disease contracted decades earlier, the local applicationist appears like the gardener who tries to exterminate dandelions by electrolysis of their flowers, petal by petal. But though such examples could be multiplied indefinitely, Prof. CUMMINS may yet be right in his implied admission that the public is not only entitled to follow advances in science step by step, but may even contribute to such advances. That great layman, Lord MOULTON, in making the methods of scientific medicine crystal clear in the courts and in the Upper House, may have contributed more to the advance of medical science than many doctors of medicine. Time and again we shall find that what we have taught the public was not knowledge, and that a recessional is humiliating, but at least we shall not be guilty of the obscurantism of our predecessors of the gold-headed cane. The acceptance of Prof. CUMMINS's epigram, "La santé est trop serieuse pour la laisser aux médecins," might not be the national calamity which its author believes. We cannot expect laymen to coöperate with us in medical research and preventive medicine and yet keep them like children outside in the dark till the Christmas tree has been lit; they want, quite naturally, to see the tree being lit, candle by candle. A little knowledge may occasionally be a dangerous thing; the housewife who asks her grocer to sell her a pound of vitamins may excite a smile, but she is at least a step ahead of her sister who is content to feed her family on canned foods. A remarkable feature of the sporadic health movement in certain parts of the United States is the prominence of the part played by laymen. In medicine as in law the common sense of the layman may prove salutary.

By a coincidence, some of the points raised by Prof. CUMMINS are answered in part by the annual report of the Medical Research Council, a brief summary of which was published in our columns last week. The section dealing with research in tuberculosis covers several pages and contains an account of research carried out in many places. In various departments of the National Institute study is being made of the pathology of general tuberculosis in young people, the relation of silica dust to industrial tubercle, the rate of metabolism in open-air treatment, and the changes in the gas of an artificial pneumothorax. At Cambridge Dr. A. STANLEY GRIFFITH is giving whole-time work to the differentiation of strains of tubercle bacilli, and in his last series of 132 cases of bone and joint tuberculosis he has found the bovine type in 13·6 per cent. At the Brompton Hospital Dr. A. C. INMAN is studying the morphology and agglutinability of the tubercle bacillus. At the City of London Hospital Dr. ROODHOUSE GLOYNE is investigating the primary sites of infection in young children. At St. Andrews Dr. A. ROWAND is studying the early signs of tubercle in children, and at Glasgow Dr. H. L. COULTHARD has completed an investigation of complement fixation in tuberculosis. This list is far from complete; other workers in various other places are giving whole- or part-time work to the study of some more or less well-defined section of the tuberculosis problem. It is satisfactory to note that some of this research is devoted to therapeutics. It may seem more logical to evolve treatment from ætiology, but sometimes it is possible to work back to ætiology from the results of treatment. The Research Council's report would have been still more helpful if it had given a fuller account of the central organisation—of its staff work. What machinery is there for keeping these comparatively isolated research workers in touch with contemporaneous investigations carried out elsewhere on the same subject? Have they to wait for such investigations to be published first in some foreign journal and then in abstract form in *Medical Science* before they can compare it with their own work? Are we in constant and intimate touch with Helsingfors, Tokyo, New York, and every other centre where research work is proceeding? It would be well if our own workers could be kept informed of what their colleagues abroad are writing and thinking.

Prof. DREYER, whose work is referred to in the report, is making special inquiries in France, Norway, and Denmark about tuberculin tests in cattle. The information he thus obtains must be more reliable than if he had been rationed to the written word and had stayed at home. It has been said by a prominent clinician that if a really important remedy for tuberculosis were discovered its value would be universally recognised in a few years. The history of medicine tells another tale, and it does so because the world's staff work and liaison organisation in medical science have been imperfectly coördinated. It is largely for this reason that we do not even now know whether the steady decline in the death-rate from tuberculosis is the result of the direct campaign against this disease or not. But public interest and public coöperation are required to finance and organise international research.

INDUSTRIAL DISEASES OF THE EYE.

THE recently published volume of Transactions of the Ophthalmological Society opens with the report of a discussion on industrial diseases of the eye, accidents, miners' nystagmus, and glass-blowers' cataract being excluded. It is satisfactory to hear from Dr. T. M. LEGGE, H.M. Medical Inspector of Factories, that amblyopia from lead poisoning, which used to be an important cause of industrial blindness, is now comparatively rare. Since 1900 lead poisoning has diminished by more than one half. In the years 1905–09 there were found 20 cases of optic neuritis from this cause; in the corresponding period 1915–19 there were only six. These results, he says, have been largely accomplished by the advance made in locally applied exhaust ventilation, by means of fans, to remove dust and fumes at the point at which they are produced, and so prevent inhalation of them by the workers. Before the war some cases were reported of amblyopia occurring in the manufacture of explosives in which dinitrobenzol was employed, but during the war blindness from this cause does not seem to have occurred. On the whole the risks of toxic amblyopia in connexion with industrial processes are now fairly well guarded against.

A further risk to the eyesight to which industrial workers are exposed concerns those working in excessive heat. It is comparatively recently that the danger of cataract has been recognised to exist for iron- and steel-workers from this cause. At present furnace-

workers who acquire cataract are entitled to compensation under the Act. According to Mr. B. CRIDLAND, this form of cataract may be identical with that which affects glass-blowers, a saucer-shaped opacity at the posterior pole; at other times the opacity is more like a blot. The commonest variety is a wedge-shaped cortical opacity indistinguishable from the ordinary senile type of cataract, so that in assessing compensation there will certainly be ample room for differences of opinion. Besides glass-workers and iron-workers it appears that chain-makers and stokers are liable to this form of cataract. Still another aspect of the subject is approached by Mr. BISHOP HARMAN in connexion with myopia. He brings statistics to show that to the myope of more than a minimal degree (3 diopters) there is measurable danger to the sight in any employment involving prolonged application to near work, such as the employment of a clerk. From an investigation of the records of some 7000 private patients he found 480 cases of myopia whose history it was possible to determine; of these 183 were habitual close eye-workers and 297 were not. The percentage of breakdowns and damage to the eyes in the former class was 53, while that in the latter was only 9·4. From further figures he shows that the relatively bad prognosis for the myopic near worker is present even in those with so relatively a low average myopia as between 3 and 5 diopters. As we should expect, with those over 5 diopters it is far more decided.

This investigation is one of considerable importance, for, although there has been a general belief among medical men that short sight means weak sight, we know of no previous statistics with quite such a practical bearing. It may be said that the circumstances of a "breakdown" do not lend themselves to statistical analysis, and it would no doubt be well for others to investigate how far the figures brought forward by Mr. HARMAN can be confirmed. Whatever the original cause of myopia may be, its increase to dangerous dimensions is a matter well within the power of preventive medicine to influence. From the point of view of prevention of industrial diseases of the eye the choice of suitable occupations for myopes is a matter of the very first importance.

VITAL STATISTICS FOR 1922.

THE Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infant mortality during the year 1922.

—	Birth-rate.	Death-rate.	Infant mortality-rate.
England and Wales.. ..	20·6	12·9	77
105 County Boroughs and Great Towns, including London	21·5	13·0	81
155 Smaller Towns.. ..	20·5	11·7	75
London	21·4	13·4	73

The smaller towns are those with an estimated population in 1921 of 20,000–50,000. The death-rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civilian population only.

The Registrar-General remarks that the birth-rate of England and Wales as a whole is the lowest recorded, except during the war years 1915–19, while the infant mortality is actually the lowest on record. These provisional figures, which are not likely to require substantial modification, have been got out for the information of medical officers of health.

Annotations.

"No quid nimis."

WHAT IS A "PURE AND WHOLESOME" WATER?

EVERY authority responsible for a public supply of water is under statutory obligation to provide it in a "pure and wholesome" condition. It is obvious that Parliament draws some distinction between purity and wholesomeness, but this was in the period when little or nothing was known about bacteria and when the quality of a water was judged entirely from the chemical standpoint. A water may be considered pure chemically if it does not contain saline constituents which are objectionable either in quality or quantity and if it contains only the merest trace of organic matter. Unfortunately there are no tests which enable us to ascertain with any degree of accuracy either the quantity or character of the organic matter found in potable waters, and chemists must be satisfied with certain estimations giving an approximate idea of the quantity present. Frankland estimated the amount of carbon and nitrogen yielded by the organic matter, but the process was too tedious and delicate for general use. Later Wanklyn introduced his "albuminoid ammonia" process and Forchammer the "oxygen-absorbed" process, and both these are now universally adopted. Using these methods chemists are accustomed to pass a water, otherwise satisfactory, if it does not yield more than, say, one part of albuminoid ammonia per 10 million parts of water, and if at the same time the oxygen absorbed does not exceed one part per million. But nothing is known of the nature of this organic matter and experience indicates that a water yielding much higher figures may be perfectly wholesome; in fact there is no proof that, in the absence of objectionable bacteria, this organic matter is more deleterious than that contained in an infusion of tea. Few waters which the chemist passes as "pure and wholesome" contain more than a small fraction of a grain of organic matter. It is not unusual, however, to find that a water containing very little organic matter may come from a source liable to serious contamination, or that it actually contains bacteria indicating slight pollution with matter of intestinal origin. It may be chemically pure, yet bacteriologically impure and therefore dangerous or unwholesome. On the other hand, since the introduction of purification by chlorine, ozone, lime, &c., a water may be rendered sterile or at least free from any bacteria indicative of pollution and yet be chemically, judged by present standards, very impure. Can such a water be deemed "pure and wholesome"? Most would regard it as impure but wholesome, notwithstanding the apparent contradiction in terms. This is becoming a very important point, and Sir Alexander Houston, in a lecture given to the members of the Institution of Water Engineers, has defined a pure and wholesome water in such a way as to lead to the inference that a good sewage effluent carefully sterilised would constitute a "pure and wholesome" water. He defines such a water as water in "such a condition that it cannot cause typhoid fever, cholera, or other water-borne disease. It must also be free from chemical poisons and have no injurious effect on metals. Further, it should be bright, clear, and sparkling, free from suspended matter, reasonably soft, and the salts in solution should not be present in excessive amount." Organic matter might possibly be included in "chemical poisons," though it is exceedingly unlikely that the organic matter found in river waters and in part, at least, derived from sewage or manure is poisonous or even obnoxious in the small quantity found in such waters. A good sewage effluent rarely contains more than 2 or 3 grains of organic matter in the gallon, so that the amount found in streams which may be used

as a source of water-supply must be and is undoubtedly much less. Unless, therefore, it is actually a strong poison or is a weak poison with a cumulative effect, the amount present in such a water which has been sterilised and carefully filtered can scarcely be harmful. Sentimentally there may be objections to the use of such a treated water, and chemists may object to its being designated as "pure," yet from the public health point of view it may be right to call it "pure and wholesome," but doubtless in some future legislation the question will be settled as to whether the designation can be accepted.

THE OPENING OF THE MAUDSLEY HOSPITAL.

THE Maudsley Hospital, 105, 107, 109, Denmark Hill, S.E. 5, will be opened formally by the Minister of Health, Sir Arthur Griffith-Boscawen, at 11.30 A.M., on Wednesday, Jan. 31st. This institution, the first of its kind to be opened by a local authority, owes its inception to the foresight and generosity of Henry Maudsley, who, in 1908, offered to the London County Council £30,000 towards the building and equipment of a hospital for mental diseases. His objects were defined as follows: The early treatment of acute cases of mental disorder, so as to prevent the necessity of sending them to county asylums; the promotion of research into the causes and pathology of insanity; and the provision of an institution where medical students might obtain good clinical instruction. The idea underlying Dr. Maudsley's beneficence is clearly indicated by a remark of his—namely, "There are not many natures predisposed to insanity but might be saved from it were they placed in their earliest days in exactly those circumstances and subject to exactly that training most fitted to counteract that infirmity." The war intervened to prevent the immediate development of the work along the lines of the original plan. Fortunately the time was not wasted, for on the initiative of Sir Frederick Mott the hospital became a valuable neurological clearing station. Now, after 14 years, Dr. Maudsley's far-seeing scheme comes into effective operation. Within the last few weeks we have set out some details of the accommodation provided[1] and of the courses of instruction.[2] We need only add here that the hospital has 137 beds, including 13 private rooms, and is under the medical superintendence of Dr. Edward Mapother. With teaching and research as part of its principal objects, the Maudsley Hospital is destined to do a great work.

PROPHYLACTIC URETHRITIS.

Dr. H. Bonnier and Dr. H. Rivoalen,[3] of Bordeaux, have given the name of "prophylactic urethritis" to the slight reaction in the urethral mucous membrane following prophylactic injections which have become so prevalent in the army and navy, especially since the war. All the substances employed for this purpose, such as the various salts of silver and mercury and permanganate of potash, are liable to cause this reaction, but if it is applied properly, prophylactic injection is followed by only a slight oozing which often escapes notice altogether. On the other hand, the use of caustic products, too strong solutions, or too frequent injections may give rise to a chronic urethritis, which is indistinguishable at first sight from gleet. The first symptoms of prophylactic urethritis usually appear within three or four hours, and never later than 24 hours after the injection in the form of a slight oozing from the meatus which may be preceded by a burning feeling in the urethra or a slight itching in the meatus, as at the onset of gonorrhœal urethritis, but, as a rule, is not accompanied by any subjective symptoms. The meatus may be a little redder than usual and slightly swollen, but usually shows no obvious external change. The urethra is supple and painless, nor is there any pain on micturition. If left to itself the discharge disappears in a few hours or at most in two days without staining the linen, unless use has been made of a solution of a silver salt which leaves an indelible black stain. The chief interest of prophylactic urethritis is due to a possible misinterpretation of the nature of the discharge. The doctor, mistaking it for the onset of gonorrhœa, may institute an abortive treatment by injection of a strong antiseptic solution which may give rise to a chronic inflammation of the urethra, prostate, and bladder. The distinguishing features of prophylactic urethritis, the knowledge of which should prevent those disastrous consequences, are of three kinds—clinical, cytological, and bacteriological. In the first place the discharge appears a few hours after the injection, which, as a rule, has been given within two or three hours after exposure to infection. It is usually colourless or yellowish, slightly sticky, less frequently milky in appearance, in which case it is indistinguishable from the discharge accompanying the onset of gonorrhœa. The cytological characters of prophylactic urethritis are its richness in epithelial cells and scarcity of polymorphonuclear leucocytes. In some cases, however, there is a very intense polymorphonuclear reaction, and no help can then be derived from cytological examination. Bacteriologically the discharge may be entirely aseptic or, on the contrary, show an extraordinary abundance of organisms consisting of various cocci and bacilli of the pseudo-diphtheria or *B. coli* type. Pseudo-gonoccocci not staining by Gram but distinguished from true gonococci by their irregular size and extra-cellular localisation are frequently encountered. It is obvious from this description that the prognosis of prophylactic urethritis is absolutely good, the only danger possible being due to its being mistaken for gonorrhœa and treated accordingly. Treatment consists in abstention from all active measures, especially if the discharge is sterile and non-purulent, while if there is an abundant microbial flora, the urethra should be washed out with an alkaline lotion, the injection being strictly confined to the meatus and adjacent part of the urethra.

[1] THE LANCET, Dec. 2nd, 1922, p. 1200.
[2] THE LANCET, Dec. 30th, 1922, p. 1407.
[3] Gazette hebdomadaire des Sciences médicales de Bordeaux, Dec. 3rd, 1922.

THE MANNER OF MAN THAT KILLS.

THE subject of murderers and their punishment is unfortunately of topical interest. The plea of insanity is offered by counsel when there is any possible chance that it might be accepted. While it is obvious that some murders are committed with a definite motive by a sane person, the more interesting types of criminals are those who are not of normal mentality. In a recently published book[1] Dr. L. Vernon Briggs lays before us with minute detail the cases of Bertram Gager Spencer, Leon Czolgosz, and Clarence V. T. Richeson, who committed their crimes in America. His point is that in men such as these defectiveness or mental disease can easily be recognised early in their lives, that the condition of the three men he deals with was, in fact, recognised or recognisable before their crimes were committed, but that the neglect of society, and lack of organisation to deal with such subjects, left them free to kill their victims, so that ultimately six lives were needlessly sacrificed. In concluding his account of Richeson and his execution, he writes: "The penalty exacted by the laws of Massachusetts had been paid and all hope of studying this abnormal man for the purpose of aborting criminal tendencies in others of this kind was wiped out in a few seconds," and he asks, "Could anything have been more destructive to this branch of science? Could society have conceived any better plan to thwart the work of preventing the development of other men of this kind?" This appears to be a fair statement of the case on behalf of

[1] The Manner of Man that Kills. Spencer—Czolgosz—Richeson. By L. Vernon Briggs, M.D., Director of the Massachusetts Society for Mental Hygiene, Member of the American Institute of Criminal Law and Criminology. [Boston: R. G. Badger. Pp. 444. 85.

the alienist who is also a criminologist. No man who callously kills his fellow for a reason which would not induce most of us even to strike a blow can be regarded as "normal," and a large proportion of the persons whom we hang in this country are from this point of view abnormal. Richeson certainly was abnormal. Indeed, in this country a defence of insanity might well have been raised successfully on his behalf. It might have failed, but in any case he would never have been allowed to plead guilty and have been sentenced to death without trial. When we consider that the girl with whose murder he was charged drank poison in her own home, no doubt after she had obtained it from him, we realise that American criminal practice differs widely from our own.

The other two cases are not such strong examples in British eyes. Spencer, in 1908–10, created a sensation at Springfield, Mass., by a series of burglaries and robberies, in which he exhibited daring and bravado. He had been known to threaten with violence and discharge a pistol when interrupted, but did not greatly enrich himself by his depredations. Finally he shot and killed a Miss Blackstone who was visiting friends, and was in their sitting-room with other women when he walked into it. It would have been very difficult to satisfy a British judge and jury that such a man did not know the nature and quality of his acts or that they were wrong, and he was duly tried and executed; but Dr. Briggs, by a most minute examination of his personal and family history, certainly establishes that he was a man who "had every right to be insane," if we may use the expression. His was a case where the antipathy of society for his act, and its result, caused a general approval of his fate; just as in True's case a like antipathy caused disapproval to be expressed when the Home Office, upon the report of its medical advisers, decided upon his reprieve. Czolgosz shot President McKinley on Sept. 5th, 1901, in the grounds of the Pan-American Exposition at Buffalo. He was tried on Sept. 23rd and 24th, and was electrocuted on Oct. 29th. There was certainly not much opportunity given to raise and support by evidence a plea of insanity at his trial, and no doubt there was a strong feeling on the part of the authorities that he must not escape the death penalty. We doubt if he would have escaped in parallel circumstances over here. He was not normal; it is difficult to conceive a normal person murdering the president of a republic or a sovereign merely because he thinks that sovereigns and presidents ought not to exist; but we doubt whether society at the present time would approve of such as he being maintained alive to be trained and studied, if their execution were thought likely to deter others from following their example. Dr. Briggs's book contains much useful matter for those interested in amending the legal test of insanity. A more difficult proposition than this for reformers would be to bring about the prevention of murders by the early recognition and treatment of such cases as he describes.

THE COPPER REACTION IN THE CEREBRO-SPINAL FLUID.

LUMBAR puncture as a means of diagnosis has become current among general practitioners, especially those who have to deal with children's diseases. The macroscopic characters of the fluid are in the majority of cases not sufficient in themselves to establish an accurate diagnosis, and further investigations of a chemico-physical and microscopical nature become necessary. It is here that the difficulties of the busy practitioner begin who has not at his command the necessary laboratory equipment and who may be at some distance from a centre where he can obtain it. A reaction which has been unduly neglected has been recently studied by Dr. A. Medi,[1] who finds reaction with sulphate of copper a method at once simple and practical and one in direct relation with the clinical facts and with the other chemico-physical reactions of the cerebro-spinal fluid and its microscopical characters. The method consists in taking 2 c.cm. of the cerebro-spinal fluid, filtering, adding three drops of each of Fehling's solutions, and boiling. According to Dr. Medi, this test always furnishes characteristic information for differential diagnosis—that is to say, the reducing substances shown by a yellow colour on boiling are not lessened in cases of toxic irritation, while there is scarcely any precipitation in cases of bacterial infection, and complete absence of reaction in meningococcic meningitis either in the first or subsequent punctures made during the acute stage. So much so, that an absence of reaction to copper solutions would justify the practitioner in having immediate resort to intrathecal injections of specific serum. Another important question arises in the diagnosis between serous meningitis and tumours on the one hand and tuberculous meningitis on the other; the most accurate clinical examination may be inconclusive, lumbar puncture may give rise to a clear fluid exuding under pressure or only by drops. The formation of a pellicle may be delayed for some hours and is not always pathognomonic, the amount of albumin may correspond to that of tumour or of meningitis. The sulphate of copper reaction in such cases gives abundant reduction in tumour and serous meningitis and always a diminished reduction in tuberculous forms. Information is also afforded by change of colour in the copper solution before boiling, which may remain blue or take on a deep amethyst tint. In 52 specimens of fluid examined by Dr. Medi he observed that fluids which took on a blue colour when boiled gave an abundant yellow or reddish-yellow precipitate; fluids with a faint amethyst tint gave less precipitate, which was greenish-yellow; while those with a deep amethyst colour did not give any precipitate. The fluids from the first of these series were from tumours, hydrocephalus, and serous meningitis; those from the second were from tuberculous meningitis, and those from the third from purulent meningitis. There are therefore two clues derived from the single reagent, one in the cold and the other after boiling, each acting as control to the other, and by their simplicity and practicability they should prove to be of great use in diseases of the nervous system, especially in children.

[1] Il Policlinico, Practical Section, 1922, xxix., Dec. 4th.

THE DIPHTHERIA "CARRIER" AGAIN.

WE recently dealt[1] with the problem of the diphtheria "carrier," which still awaits solution. Some observations on the value of bacteriological diagnosis were made by Dr. R. A. O'Brien at a recent meeting of the Metropolitan Branch of the Society of Medical Officers of Health. He pointed out that when the experienced clinician diagnoses a case as one of indubitable diphtheria the laboratory, in practically every instance, finds virulent bacilli in large numbers. In such cases as these the clinician was not aided by bacteriological diagnosis, while grave damage might result from treatment being delayed until the results of bacteriological examination were available. On the other hand, many patients who were free from diphtheritic infection and who would not be diagnosed by the clinician as suffering from that disease, were labelled as diphtheritic because cultures from throat swabs showed diphtheroid bacilli. Other cases were diagnosed as carriers on similar evidence. Dr. O'Brien thought the present position did not reflect credit on our public health system. Though he would not go so far as the American writer, who would abolish the whole system of laboratory diagnosis and entrust the diagnosis of diphtheria entirely to the clinician, he would go a great part of the way. Definite cases could be diagnosed clinically without swabbing, and cases not recognisable on clinical grounds should not, without further examination, be diagnosed from a swab unless the growth showed abundant Klebs-

[1] THE LANCET, Dec. 16th, 1922, p. 1289.

Löffler bacilli in the manner characteristic of the definite clinical case. Quantity and virulence should be considered, and he would not as a bacteriologist recommend the isolation of a carrier if the bacilli in the smear from an overnight culture were very scanty. The patient should not, he thought, be isolated until a virulence test had been applied, except in cases where the experienced clinician had made a definite diagnosis. Consulting experts were rapidly mobilised for such things as small-pox, plague, and encephalitis, and Dr. O'Brien suggested that it might be possible to have similar visiting consultants for notified cases of diphtheria, who would decide whether it was justifiable on the clinical evidence alone to remove the patient, giving an initial dose of antitoxin the while; otherwise a virulence test should be undertaken. In large centres of population the health authorities should, he thought, make available as full facilities for the virulence test as for the ordinary microscopical examination of overnight cultures. Hospital accommodation and money might be further saved by applying the virulence test in the hospital immediately after admission in all cases which were not diagnosed definitely as diphtheria on clinical grounds.

OBSERVATIONS ON SPINAL ANÆSTHESIA.

Mr. D. N. Kalyanvala has sent us some observations on spinal anæsthesia, a pamphlet reprinted from the *Edinburgh Medical Journal*. The foundation on which the observations are based is the small number of 81 cases; but these have evidently been carefully investigated, and if the author has no new facts to add, at any rate his observations provide valuable confirmation of some of the less commonly recognised phenomena of spinal anæsthesia. Much attention was given to the blood pressure of these patients. Mr. Kalyanvala does not employ the spinal method if the pressure is less than 100 mm. He approves highly of preliminary injection of narcotics, often procuring a genuine "twilight sleep" before the puncture. An illustration shows the author's instrument for recording the intraspinal pressure. He maintains that this bears no simple relationship to the arterial pressure. High blood pressure was noticed with low cerebro-spinal pressure, and vice versa. The author also states that there is no relationship between arterial blood pressure and post-operative headache or between this headache and the preliminary intraspinal pressure. He distinguishes two separate classes of headache after spinal injection, frontal and occipital, and refers the latter to meningeal irritation from the puncture. In a communication which we published last week, Dr. S. A. Lane claims that headache is infrequent when the combination is used of twilight sleep and spinal injection. The immediate use of the Trendelenburg position after the injection has been made appears risky, and sitting the patient up for injection when he is well under the influence of the hypodermics is certainly sometimes undesirable.

MELANOBLASTOMA OF THE NAIL-BED.

Dr. Arthur E. Hertzler,[1] of Halstead, Kansas, has given this name to a condition sometimes known as "melanotic whitlow," which is a malignant disease of the nail-bed marked by the formation of newly-formed tissue about the nail border and beneath the nail. The growth is characterised by the formation of melanin and a tendency to spread by the lymphatics. The condition is rare, barely 20 cases having been recorded, 15 of which Dr. Hertzler summarises, in addition to an account of two cases which came under his own observation. Local recurrence and lymph gland metastases have occurred in all the cases which have been followed long enough. Apparently all the patients die sooner or later of the disease, although some may remain free for as long as ten years. From similar lesions which Dr. Hertzler has studied in the lower extremity, he thinks it probable that early diagnosis and prompt amputation may produce a cure. X rays and radium, as in all forms of melanotic disease, are worse than useless. Histological examination shows a fringe-like arrangement of the tumour cells just beneath the epithelial layer, with little tendency to nest formation. Dr. Hertzler's cases represented a relatively early stage of the disease, both exhibiting the characteristic black border about the lesion without any involvement of the neighbouring lymph glands. In the first case, which occurred in a woman aged 64, the thumb was amputated 18 months after the onset, and the patient was still free from recurrence two years after the operation. In the second case, which occurred in a woman aged 54, the condition was first noticed by the patient four years before she came under observation. Amputation was performed at the midphalangeal joint, and healing took place without reaction. As the operation had been performed only two months previously, no recurrence was to be expected for some time.

[1] Archives of Dermatology and Syphilology, December, 1922.

WELFARE SUPERVISORS.

AT a dinner given by the Industrial Welfare Society on Jan. 18th one of the directors, Mr. Robert Hyde, said that the pressing need of the moment was a training centre where men and women, temperamentally suited for the task of welfare supervision, might receive instruction in the technical details with which they would have to deal. He hoped that some public-spirited person desirous of contributing to the cause of industrial peace would come forward and provide such a centre.

The first attempt to provide systematic training for social work was made towards the end of last century, when the Charity Organisation Society and the Women's University Settlement instituted a joint scheme of study, which later developed into the London School of Sociology. In 1904 the University of Liverpool established a school of social science: four years later the University of Birmingham followed suit, and in 1912 the London School of Sociology became merged in the social and administrative department of the London School of Economics. Before the war broke out the Universities of Bristol, Glasgow, Leeds, and Manchester had started social study courses, a movement to which the war gave an unexpected stimulus. The demand for trained workers largely exceeded the supply, and in spite of a period of uncertainty following the war it is probable that the demand will keep up. The teaching given in these courses includes industrial history, social philosophy and service, economics, psychology, finance, ethics, politics, and internationalism. A certain number of visits are paid to hospitals and to labour exchanges to find suitable employment for individual cases. The average course is two years, and at the end of this time a social diploma can be obtained, but the training is largely theoretical, and can only form a groundwork for the knowledge required by a welfare supervisor actually working in industry. It is impossible in colleges to teach men and women how to handle their fellow-workers, a faculty which requires practical training under an able teacher.

We take it that this practioal training is what Mr.Hyde would have established, and the only way in which it can be done is to draft the students into factories where welfare supervisors are already employed, and let them work in conjunction wth these teachers for a period. After such apprenticeship the welfare workers would be qualified to seek employment in any industry. They would have both theoretical knowledge and the practical knowledge of the regular methods employed in factories of dealing with human beings. Naturally, the details of a particular factory routine would have to be acquired by working in that factory. The present system of things is haphazard. The employer who

contemplates for the first time having a welfare supervisor for his works, takes a man or woman with a diploma from one of the present training centres who has never seen the real workings of factory life, and that supervisor, although excellent in theory, is useless in practice. Naturally, there is mutual dissatisfaction. The whole need of present welfare workers is a sufficiency of factories where they can have their theoretical knowledge tempered by practical experience gained under an able fellow-worker.

THE NATURE OF BRAXY.

FOR hundreds of years there have been losses in the sheep flocks of this country, amounting in certain districts to 20 to 50 per cent. of the hoggets, from a disease with characteristic symptoms and a concise name—braxy, although little or nothing was known of its nature. Two accessible books of reference describe braxy as "symptomatic anthrax" and "plethora of the blood resulting from change of pasturage." Spasmodic investigations have been made into the origin and prevention of the malady, for which in turn the bacillus of malignant œdema and the bacillus of black quarter were held responsible. With the help of a Government grant and a research laboratory, S. H. Gaiger, F.R.C.V.S., and his assistant, T. Dalling, M.R.C.V.S., have since 1917 worked to elucidate the infective agent, and their results appear in the *Journal of Comparative Pathology and Therapeutics* for September and December, 1922. It may now be regarded as settled that the *vibrion septique* of Pasteur is the contagion of braxy. The primary lesion is situated in the fourth stomach where the vibrio produces a toxæmia which gives rise to serious changes in the kidneys and to a lesser degree in the liver and heart. Climatic conditions have much to do with the incidence of the disease, for frosted food in the rumen chills the fourth stomach and renders it liable to attack, especially when a change of weather from frost to mild or the reverse occurs. The choice of a preventive appears to lie between Jensen's sero-vaccine method and the toxin method. Mr. Gaiger is confident that in a few years' time a laboratory braxy preventive will be in general use.

MAX NORDAU.

THE death of Max Nordau, which occurred in Paris early this week, at the age of 74, would have attracted more notice had he died in middle age, when the most famous of his works on social maladies, *Degeneration*, was published. He was a medical man, but previous to graduation at the University of Buda-Pest, at the age of 24, he had already published stories, essays, and poems, and had been regularly connected with at least one great Austrian newspaper. Almost immediately after his qualification he spent six Wanderjahre, visiting all the great European capitals, and when he started in Paris as a physician he could show an equipment to analyse continental social life such as few can ever have possessed. Settled in the centre of French literary and social activities the early result was a daring book, *Conventional Lies*, in which he assailed practically the whole of modern civilisation as being founded on subterfuge. Its sequel, *Paradoxes*, contained an analysis of the machinery for the investigation of conventional lies, and in 1893 he rounded off his pessimistic theories of civilisation with *Degeneration*, a learned and mordant essay on the theme that genius and madness are allied, which was appropriately dedicated to Lombroso. In a totally different field—namely, in the promotion of Jewish national ambition, Nordau was also a leader, and here, as in his sociological work, we can trace the influence which his medical training always exercised over him. Much of what he did and what he wrote was bitterly assailed—he would not have had it otherwise—but there is no doubt that he was animated by a brave reforming spirit.

WE regret to announce the death of Mr. Hunter Finlay Tod, senior surgeon to the Ear, Nose, and Throat Department of the London Hospital.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

IV.

THE TREATMENT OF WHOOPING-COUGH.

Prophylactic Treatment.

1. *Isolation.*—Every case of whooping-cough should be immediately isolated and kept away from uninfected children for two months, or for 14 days after all paroxysms have ceased. Parents should be instructed as to the infectious nature of the disease, and particularly of the enhanced risk of infection when a healthy child is in contact with an infected one in a confined space. For this reason while the paroxysms last, and for 14 days later, infected children should be excluded from schools, clinics, omnibuses, trains, and trams. It may be desirable to get such a child away to the seaside or country, but precautions, such as a special carriage, which can afterwards be disinfected, should be taken. Particular care must be exercised in detecting and isolating those mild cases which often escape diagnosis; as a general rule, any child with a chronic or paroxysmal cough should be regarded as a case of whooping-cough if another member of the family is known to be affected with the disease. This rule applies especially to infant welfare centres, creches, and infant schools which, in the absence of strict precautions, may readily become converted into breeding-centres for disease.

2. *Immunisation.*—In the case of particularly delicate children, children with incipient tuberculosis, or the children of very anxious parents, an attempt to confer some degree of immunity may be made by giving a series of injections of vaccine of the type described below. The parents must be warned that immunity cannot be guaranteed, but that such treatment affords reasonable hope of minimising the attack and preventing dangerous complications.

General Treatment.

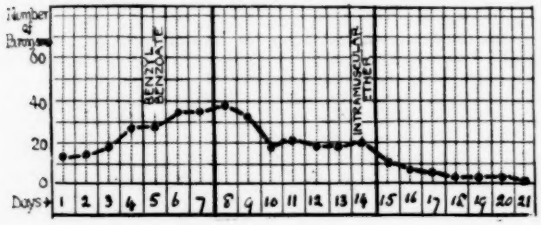
1. *Hygiene.*—Exposure to severe weather must be avoided, but in uncomplicated cases there is no doubt that paroxysms are less frequent in the open air or in well-ventilated rooms than in hot and stuffy rooms. Dust and smoke even in minimal quantities may excite coughing, and provided that chill be avoided it is better that the child's temperature-regulating mechanism be exercised by adaptation to mild changes of temperature, than that his delicacy be increased by a perpetual artificial warmth. When going out of doors such children should be well clad, mothers should be discouraged from allowing them to have legs, arms, and necks exposed as they often are with modern clothing. At night flannel pyjamas afford a protection to the restless child who is apt to throw off his bedclothes.

2. *Dietetic.*—Nothing is more important in the treatment of whooping-cough than the diet. The disease is a serious one involving considerable physical exertion on the part of the patient, recovery cannot take place for some weeks at least, and at any moment complications may arise during which a few grammes of energy-producing food reserve may turn the scale in the patient's favour. For these reasons it is the duty of the medical attendant to see that the food-intake is adequate.

It is always risky to change the diet of a healthy infant, it is even more risky in the case of a sick one. If a baby has been thriving on any particular food up to the moment of infection it is not probable that a change will be for the better, but a change in the time of feeding may be advantageous. The giving of food to a baby or a child with whooping-cough often provokes a paroxysm: this makes the patient unwilling to feed, and frequently leads to the vomiting of that part of the meal which has already been

swallowed. It is therefore better to give a feed about ten minutes after a paroxysm, at which time it will usually be comfortably retained. In the case of babies, the feed should be given after the first paroxysm occurring subsequent to the normal hour of feeding; if vomiting and loss of weight are taking place the intervals between feeds should be decreased, and the bulk of food at each feed diminished. With older children large meals must be avoided, and fluid foods such as milk, soups, &c., given between meals, the period following a paroxysm being chosen for each meal or feed.

3. *Record of Progress.*—The best record of progress in any case is given by a chart showing the number of paroxysms occurring each day. Mothers should be trained to make a note of each attack of coughing from 8 A.M. until 8 A.M. on the following day. In this way the practitioner can keep a chart such as that here reproduced, which will give him a reliable index of progress.



Specimen chart of type to be used as a guide to progress and effects of treatment in pertussis.

Specific Treatment.

Although there is strong evidence that the Bordet-Gengou bacillus is the specific cause of whooping-cough, we have as yet no specific treatmen t; vaccine treatment as outlined in the next section is advisable, but results are not good with sufficient uniformity to allow of such treatment being called specific.

Vaccine Treatment.

Vaccine treatment in whooping-cough, whether prophylactic or curative, is logical and harmless; it is not at present possible to say that it is invariably beneficial. I recommend it especially as an aid to the prevention of pulmonary complications, and for this reason I advocate a mixed vaccine containing the Bordet-Gengou bacillus, together with strains of various organisms commonly encountered in the pulmonary diseases of children. Such a vaccine should have a composition somewhat as follows:—

Bordet-Gengou bacillus	..	250 million.
Pneumococcus	..	125 ,,
M. catarrhalis	..	50 ,,
B. Friedländer	..	50 ,,
B. septus	..	20 ,,
Staph. aureus	..	250 ,,
Streptococcus	..	20 ,,
B. influenzæ	..	150 ,,
Total	..	915 million per c.cm.

Of this, the dose for a child of 5 years should be 0·1 c.cm., doubling the dose every four days unless there be strong reaction; in the case of a child severely ill the dose should not exceed one-half of the above.

Symptomatic Treatment.

1. *Local.*—Good results have been claimed from intratracheal applications, but the method is too difficult for general use; unless performed by a skilled laryngologist the effects are more likely to be harmful than good. Inhalations escape from these objections, but their utility is more doubtful; creosote and benzoin are the substances most readily available, with older children they may be recommended and often appear to give relief; they should be vapourised with boiling water, the patient periodically inhaling the concentrated vapour. The practice of vapourising such substances with steam kettles or lamps should be discouraged, as it tends to lead to imperfect ventilation.

2. *Internal.*—All the common drugs used in pulmonary conditions have been tried; it cannot be said that the results have been in any way brilliant. Belladonna is often recommended; it should be given in full doses, preferably in the form of hypodermic injections of atropine sulphate, gr. 1/500, repeated four-hourly, and for a child of 2 years gradually increased to double the dose. If the signs of atropine poisoning are watched for there is no danger; smaller doses cannot be expected to have effect. A popular combination is that of belladonna with bromide, 10 minims of tincture of belladonna with 1 gr. of sodium or potassium bromide being given six-hourly to a child of 2 years. In very severe cases, where there is much loss of sleep, morphia and opium derivatives are permissible, but they must be used with caution. Antipyrin in doses of 1 gr. for every year of age, increasing to double this dose, has many adherents; it should be discontinued if complications arise.

In later stages, when there is no bronchitis, benzyl benzoate is often remarkably effective; my own practice is to give it in doses of 10 drops of a 20 per cent. alcoholic solution for a child of 2 years, adding some simple emulsion to bring the given dose up to a volume of 1 drachm. This is given every four hours in increasing doses.

In chronic cases it frequently happens that the reflex paths involved in coughing become so sensitive that a paroxysm is provoked by the most trifling causes. In such cases an attempt should be made to break the vicious circle; this is sometimes accomplished with dramatic success by means of intramuscular injections of ether; on each of three successive days, ½ to 1 c.cm. of ether is injected deep into the muscles of the gluteal region, a well-kept chart recording the paroxysms will demonstrate the value of this treatment. It should be noted that such injections are painful, which makes it inadvisable to use them except in such cases as have been indicated—i.e., when there is chronic paroxysmal coughing, without adequate exciting cause, and an effort to break a vicious circle is necessary.

Treatment of Complications.

1. *Hæmorrhages* may in rare cases be sufficiently severe to call for local treatment by plugging, &c. Small repeated hæmorrhages are in all cases an indication for active attempts to minimise the severity of paroxysms; it is such cases as these that justify the use of morphia and its derivatives.

2. *Respiratory complications* must be treated on orthodox lines; broncho-pneumonia is the chief danger to life in this infection, and it should always be remembered that the patient's chance of survival depends largely on nutritional reserve; this, as has already been said, is the great reason for careful dieting.

3. *Diarrhœa* is frequently seen in infants infected with pertussis during the summer months. Its treatment is often difficult, and the practitioner must be guided by the knowledge that in most cases the diarrhœa is merely a manifestation of the general disease.

4. *Convulsions* and other nervous complications are of grave import, but call for no treatment other than that usually employed in such conditions.

After-Treatment.

With the exception of measles, no disease is more likely to be the forerunner of tuberculosis; convalescence should therefore be carefully supervised, and whenever possible a change of environment to a mild, sunny, climate should be secured for a time. Iron and arsenic, alone or together with malt extract, are of value at this stage. Persistent infections of the naso-pharynx should be attended to, and the general resistance of the patient improved to the utmost extent by careful hygienic measures and a diet containing abundance of vitamins and lipoids.

T. IZOD BENNETT, M.D. Lond., M.R.C.P.,
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Special Articles.

GREEK COINS AND THEIR STORY: THE WEBER COLLECTION.

BY S. W. GROSE, M.A.

READERS of THE LANCET will not need to be reminded of the many-sided professional activities of the late Sir Hermann Weber, but it may surprise them to know that his hobby had for a long time been that of collecting Greek coins, of which he formed one of the most important collections, numbering some 8000 specimens, ever made in this country by a private individual. In this taste he followed another doctor of great eminence. To the medical profession the Hunterian collection means the great collection housed in the Royal College of Surgeons of England. To the numismatist and antiquary it only signifies that magnificent series of Greek, Roman, and other coins bequeathed to Glasgow University by William Hunter, "a man" as Dr. Macdonald describes him, "of singular foresight and breadth of view in every department of intellectual life," who "regarded the possession of his Cabinet as a public trust and its augmentation as a public duty." Of the 30,000 coins of this famous cabinet over 12,000 are Greek. Weber and Hunter, while each acquiring many fine examples of the mints of Magna Graecia and Sicily, had greater opportunities, and perhaps a greater predilection, for acquiring coins of the Grecian mainland and the Greek cities of Asia Minor.

This first volume[1] of the Weber catalogue contains 1795 coins, while of the Hunter cabinet some 2300, or a rather smaller proportion, belong to Magna Graecia and Sicily. There is a third collection in this country, that formed by the late J. R. McClean and given by him to the Fitzwilliam Museum, Cambridge, which contains over 3000 coins for these mints out of a total of rather over 10,000, and thus outbids in importance for that part of the ancient world both Weber and Hunter. Hunter, 140 years ago, made arrangements for his coins to be catalogued. McClean and Weber have followed that excellent example. It is unfortunate that the Weber coins have had to be dispersed; but Messrs. Spink and Son, who bought the collection, merit the warmest thanks of the numismatic and art world for the magnificent way in which they have carried out the stipulation that they should publish a catalogue of these coins; and Mr. Forrer is to be congratulated on the accomplished manner in which he has performed his labour of love in making this material accessible. It is also a great pleasure to be able to record that many pieces of the utmost rarity and of supreme historical and artistic importance have been acquired for the British Museum by the aid of a special grant from the Treasury of £10,000.

According to Greek tradition the Lydians were the first people to coin money, probably in the eighth century B.C. The invention quickly passed across the Ægean Sea to the Grecian mainland (*c.* 650 B.C.), and on to the rich Achaean colonies of southern Italy and to the cities of the princes of Sicily. The *floruit* of the art in Magna Graecia is *c.* 550–300 B.C.—some bronze issues go on beyond this date—with a period of finest workmanship *c.* 440–350 B.C. Mr. Forrer says in his introduction that he hesitated as to whether he should follow the traditional method of describing the coins according to geographical divisions or adopt the chronological method of classification advocated by Prof. Percy Gardner in his brilliant work, "A History of Ancient Coinage." We imagine that few numismatists will share Mr. Forrer's regrets that he could not see his way to adopt the chronological method. The first duty of a cataloguer is to make his material accessible, and this can be most readily done by describing the coins which belong to the same mint all together. To break up the mint sequences for a chronological arrangement can only result in chaos in a catalogue of a large collection, and is not worth attempting in a small one. Prof. Gardner has suggested lines of investigation which, he may be sure, others will not leave unexplored. But the method is for the teacher and the working out of the details for the researcher; for both of them the compiler of a catalogue has to supply the raw material, and it must always be his first care to supply that material in the most accessible form.

As to the form of the printed page, Mr. Forrer, trained by his long experience of sale catalogues, sees no reason to break away from the arrangement whereby the description of the obverse side of the coin is printed right across the page, followed by the reverse. For large collections where there may be long runs of similar coins, I believe that the arrangement of obverse and reverse in parallel columns is preferable. I should also prefer to break the pages by printing the monetary denomination in bold type before each group instead of in the same type after each coin, as Mr. Forrer has done. He is very generous, too, with his references. Six, seven, eight (1269 and 1349), even nine references (1270) may be given for a single coin, and each reference is given a fresh line. Mr. Forrer is probably justified in thinking it unnecessary to give the relative positions of the obverse and reverse dies for this part of the Greek world. It may here be mentioned that Mr. Forrer has been very well served by his printers, and the set-up of his page is most attractive.

In this volume the following may be noted as lending especial distinction to the collection.

Nos. 309, 310, early didrachms of Cumae with the head of Athene, No. 511, the earliest stater of Tarentum, with Taras incuse on the reverse, and 512, the famous stater showing Apollo Hyakinthios, one of seven known specimens, and now in M. Vlasto's collection; No. 548, a splendid gold stater of Tarentum with the types of Hera and the Dioscuri, both sides unusually well struck up with all the details preserved: this specimen is finer than that which came to the McClean collection from the Earl of Ashburnham's sale; Nos. 880–881 staters of Thurium, the first by the artist, Molossos; No. 1025, a beautiful example of the Croton stater with the seated Herakles. There are some choice coins of Metapontum and Heraclea.

In the Sicilian series I note No. 1247, a fine tetradrachm of Camarina, by the artist Exakestidas. Nos. 1268, 1269 are two superb tetradrachms of Catana by Herakleidas, particularly 1268, with the youthful head of the river-god Amenanos on a very widely spread flan; 1270, also of Catana, is by Euainetos, the head of Apollo of exceptional style. Fine coins of Gela are No. 1325 with the standing figure of Sosipolis crowning the man-headed bull Gelas, and 1330 with the head of the young river-god. Many will regard either this coin or the unique tetradrachm of Segesta (showing a slow moving quadriga in place of the usual female head) as the most desirable piece in this section of the collection. The latter coin has now passed to Mr. A. H. Lloyd. No. 1349 is the famous tetradrachm of Himera with Pelops driving the Olympian chariot on the reverse.

No. 1452 is a *tetradrachm* of Motya and No. 1453 a didrachm with the nymph's head *facing*. There are 14 tetradrachms of the period of signed artists' signatures at Syracuse, including Kimon's facing head of Arethusa, tenderest and sweetest of female heads on Greek coins, the type which immediately enjoyed a wide success and was copied in far distant parts of the Greek world. There are also three silver dekadrachms and good examples of the Syracusan gold and electrum issues. Unique, but of less interest, are two varieties of Agrigentum, Nos. 1191 and 1197.

I add the following notes on points of detail.

No. 141, the quincussis of an issue of *aes signatum*, one of six known specimens. The figures given seem to suggest that the "small fragment" which has been added weighed 635 g. Is the fragment the same as that sold with the main piece at the Tighe sale, and there recorded as a fragment of another ingot and as weighing 122 g.?

No. 198 Ariminum. Should the warrior be armed with a sword (Carelli, B. M. Cat., &c.) or with a spear, as Mr. Forrer says? My own impression is that on these coins he has a short sword and a spear, the latter being the sheath of Carelli, Pl. xxiv., 1.

[1] The Weber Collection. Vol. I. Greek Coins—Italy, Sicily, &c. By L. Forrer. London: Spink and Son. 1922. Pp. xvi. + 377, with portfolio of 69 plates. £3 3s.

No. 314. From the spacing of the letters I should judge that ⸸ is a form for Y and not a plant or a harpoon as suggested by Imhoof and Sambon. McClean No. 219 has the form shaped ⸸ in the writing of the ethnic usually given as AWIΔV.

No. 321. To judge from the style of the obverse I should wish to assign this anepigraphic coin to Nola rather than to Neapolis.

No. 332. Why not print the monogram as in other cases? The proposed resolutions do not take into account the small Λ at the foot of the first upright which is visible on the plate and on other specimens.

Nos. 365, 367, &c. "Hemilitra" in several places where "hemilitron" is intended (hemilitron used later in the book).

No. 502. Another example of a countermarked quadrans of Graxa, to be added to the seven examples of this coin, which I was able to find when dealing with the coins of this mint in Num. Chron. 1916, p. 203 seq. The weight of this specimen helps to confirm the views there expressed.

No. 503 and pass., "cockle-shell." Generations of numismatists have insisted on calling this shell by a wrong name. It is really the scallop—pecten, as Mr. Forrer adds in brackets to Nos. 649–50.

No. 720. The suggestion that this coin may belong to Caulonia is attractive.

No. 909. The obverse type reproduced on the plate is certainly of a coin of Orra. In fact, it is the coin figured on Pl. 23, No. 507.

No. 1009. The letters, I believe, are PA and not DA.

No. 1012. It occurs with the radiating lines on the reverse of a McClean coin of Croton, combined with an obverse bearing a cantharus for symbol.

No. 1196. Compare with this coin of Agrigentum signed MTP one of quite similar style with the fly for symbol on the obverse, which will be found in the McClean collection (No. 2042).

No. 1451, formerly attributed to Segesta, but assigned by Mr. Forrer to Motya, suggests the probability of a close connexion between the two mints. For while the ivy-leaf behind the female head on this coin occurs on coins certainly of Motya (e.g., McClean 2460)—the head itself is closer in style to an undoubted coin of Segesta (McClean 2552), where it is combined with the obverse type of this Weber coin, a hound standing on a stag's head and above it a small head, τ. This symbol also occurs on coins of Segesta with the ordinary type of prowling hound.

No. 1639. Is the reading given by Mr. Forrer as [IET]ΣAET OEPI[OΣ] to be accepted as a die-sinker's blunder or has E dropped out between Σ and Λ?

Misprints. I have noticed very few. On p. 46, last line, "oter" for "other"; in No. 917, rev., delete the comma after "above"; in No. 1270, "vreath" for "wreath." There is a small error in spacing in the first line of No. 356.

It appears that Weber's interest in Greek and Roman coins was "first roused by types referring to the healing art." Not many such types are to be found in Magna Graecia, the nearest approach perhaps being the coin of Himera, with the nymph at the altar and a Seilenos washing himself in the warm springs, while ceremonies of purification from pestilence are depicted elsewhere, notably on coins of Selinus. For the greatest rarities and treasures of supreme artistic value we must wait for the succeeding volumes.

Christ's College, Cambridge.

DENTAL CARIES IN RELATION TO THE STRUCTURE OF THE TEETH.

A PRELIMINARY report[1] of the special committee which is investigating the causes of dental disease has just been issued and deals with the structure of the teeth in relation to dental caries. The name of Mr. Howard Mummery as author is a guarantee of the accuracy of the histological work on which this report is based. The illustrations are beyond all praise and show that in the difficult field of dental histology this country has nothing to learn from any other. The committee has wisely decided to issue reports on various aspects of the investigation as they are completed. This interim report does not, however, represent the committee's final word even on the subjects discussed. The significance of this subject of the structure of teeth in relation to dental caries is twofold. There is, first, the question as to how far variations in the density of calcification of the teeth may predispose to dental caries; secondly, the question arises whether the enamel is to be regarded as an inert substance which, once formed, is incapable of further change, or whether it contains organic matter and may be within the pale of nutrition and possibly capable of reacting to injury like other tissues. There is a general agreement that the stagnation of carbohydrate substances, by causing the formation of acid, is the actual cause of caries; there is also agreement that gross defects of the enamel such as occur in hypoplastic teeth, by favouring the retention of starchy food, predispose to caries. On the other hand, there is considerable divergence of opinion as to the importance of structure in accounting for the widespread incidence of caries. Sim Wallace allows but little importance to this factor and points to the undeniable fact that hypoplastic teeth, though favouring the initial onset of caries, yet, because of their poorly calcified structure, often lead to a natural arrest of the process. Mrs. May Mellanby, as the results of experiments on animals, concludes that defective calcification is due to deficiencies of diet and regards it as a factor of considerable importance. In a recent paper[2] she has shown that many deciduous teeth which appear perfect to the naked eye, on microscopical examination frequently reveal defective formation of enamel and dentine. Over 80 per cent. of deciduous teeth examined showed imperfect calcification, and of these the great majority were carious. It would be unwise to stress too much the significance of this research until it has received further confirmation, but it would suggest that we must widen our definition of hypoplasia to include defects of calcification only visible under the microscope. This conception would undoubtedly extend the rôle of defective structure as a factor in dental caries, for whereas macroscopic hypoplasia is only found in the minority of children, the microscopic hypoplasia described by Mrs. Mellanby is present in a large proportion of deciduous teeth. A reflection suggests itself that on this assumption, liability to dental caries may be as much a matter of the general health during the period when the teeth are being calcified as of the dietetic conditions which exist after the eruption of the teeth. The deciduous teeth commence to calcify before birth; thus the prevention of dental disease, so far as it depends on the defective structure of the teeth, may be said to come within the scope of antenatal hygiene.

Does the Enamel Contain Organic Tissue?

The second problem as to whether enamel is an entirely inorganic substance and therefore a passive factor in dental caries, or whether it contains organic tissue and may thus be within the pale of nutrition is a much more speculative matter. Mr. Mummery subjects the available evidence to close scrutiny and adds some further evidence of a suggestive nature. C. Tomes held that enamel is entirely inorganic. If this be so, then the view of H. P. Pickerill that enamel undergoes hardening after eruption cannot be correct. Equally, the suggestion of F. W. Broderick, that in periods of calcium deficiency lime salts may be withdrawn from the enamel must fall to the ground, for both hypotheses postulate the presence of organic matter in enamel. On the chemical side the analyses of C. Lovatt Evans show a small though definite amount of organic material in enamel. On the histological side Mr. Mummery brings strong evidence to show that enamel contains spaces which are penetrable by stains. It would seem reasonable to assume that these spaces are filled with protoplasm during life, though the actual proof of this may be

[1] Medical Research Council. Reports of the Committee for the Investigation of the Causes of Dental Disease. I. The Structure of Teeth in Relation to Dental Disease. By J. Howard Mummery. H.M. Stationery Office. Pp. 24. With 18 illustrations. 2s.

[2] British Dental Journal, Jan. 1st, 1923.

a difficult matter. But although chemical and histological evidence strongly suggests, and, indeed, even proves, the presence of organic matter in enamel, this is not tantamount to saying that such changes as those suggested by Pickerill and Broderick actually take place. All it does is to make them at least a tenable proposition by showing that the necessary conditions exist in enamel. The proof is still to come. To the hygienist anxious for some practical method of preventing dental disease, these speculations may seem academic, and, indeed, even harmful in that they may tend to diminish the importance of carbohydrate stagnation as the all-sufficient explanation of dental caries, and with it the simple and undoubtedly valuable prophylactic measures which are based on that theory. With this view we cannot agree. With increasing research the problem of the ætiology of dental caries becomes correspondingly complicated. It would be doing an ill service to scientific dentistry to make the problem a simple one by arbitrarily excluding factors which are admittedly speculative at present. We are glad that the committee, as shown by the report, intends to take a wide view of the subject and to examine carefully every factor which may possibly throw light on the causation of dental caries.

Arrested Caries.

A section of this report is devoted to the subject of "arrested caries," a condition of great practical importance. It has long been known that in certain circumstances the process of caries may be arrested and the tooth become even harder than normal. It occurs commonly in the deciduous teeth, but may also be present in the permanent teeth, especially in hypoplastic molars. The caries, instead of spreading down the dentinal tubules toward the pulp, spreads laterally and causes a large area of the enamel to flake off. This leaves a broad, flat surface which does not favour food retention; at the same time the pulp reacts to an injury not intense enough to kill it, and causes a hypercalcification of the dentine. Such a tooth, though discoloured and partly eroded, may last for many years in a healthy condition. Though we know the general factors which bring about this protective reaction, we do not yet know them in such detail as to be able to induce the condition with certainty in any given case.

Dental Therapeutics.

Mr. Mummery discusses the use of silver nitrate in arresting caries. This drug has long had a popular repute and is undoubtedly useful. Is it possible to use it to better advantage? Is the reduced silver-nitrate method, introduced by P. Howe and widely used in America, better than the solid silver nitrate as generally employed in this country? Further investigation of the question is still needed, for a combination of clinical and laboratory methods might solve the difficulty.[3] A knowledge of all the factors necessary to bring about this natural arrest would increase the scope of dental therapeutics enormously. School dentistry holds an assured place to-day as one of the ways of safeguarding the public health. At present arrested caries occurs sporadically, and in the minority of cases. Could we possess in full detail the knowledge necessary to control this beneficent reaction and so induce its occurrence on a large scale, school dentistry would gain immeasurably in efficiency. It is far too early yet to predict the outcome of the Committee's deliberations, or even to forecast the scope of their investigation, but we may confidently expect that this will leave no aspect of the problem unexplored. Especially do we hope that the clinical aspects of dental caries will receive careful investigation, for we believe the study of these to be essential to a full solution of the problem.

[3] For an interesting discussion of this subject see Wirkung von Silbernitrat bei der Behandlung der Milchzahncaries, E. Winzenried, Schweizerische Monatsschrift für Zahnheilkunde, November, 1922.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Preparations for the Thirty-fifth Congress of Internal Medicine.

ON April 9th the Thirty-fifth Congress of German-speaking Physicians (Internal Medicine) will be opened in Vienna and will last for four days. Prof. Karl Wenckebach has been chosen President, and will be responsible for the arrangements. Two chief subjects to be discussed are (1) encephalitis lethargica, and (2) arterial hypertension. Two eminent investigators have been asked to present the first subject—Prof. K. Economo (Vienna) and Prof. Nonne (Hamburg); whilst the other will be introduced by Prof. A. Durig (Vienna) and Prof. F. Volhard (Halle). During the Congress it is intended to show a large series of patients with disturbances of the endocrine glands collected from the Vienna clinics, and to hold a discussion on this subject. The medical staff of the University of Vienna have addressed an open letter, published in the leading German medical journals, to medical men working in German clinics, urging them to attend in large numbers, as the younger Viennese practitioners desire to become better acquainted with the ideas of their German colleagues.

The Austrian Cancer Society: A Competition.

A prize of 2,000,000 kronen—a fairly large sum for this country, but only equivalent to about £6 10*s.*—is offered by the Austrian Society for Investigating and Combating Cancer, for the best paper published up to the end of 1923, which effectively promotes the progress of the campaign against this disease. Austrians are especially invited to compete, as it is not expected that foreigners would be attracted by such a comparatively trifling prize, but, of course, all investigators are welcome, as long as their papers are written in German or translated into that language. The paper need not emanate from a recognised laboratory or clinic; a private practitioner or any medical man may compete. A large number of entries from among the younger Austrian men is expected.

Report of the Austrian Pasteur Institute.

Dr. Schweinburg, of the Vienna Pasteur Institute, has prepared, in time for the centenary of Pasteur, a report which bears out the excellent results obtained by the method inaugurated by that famous scientist. The report compares the results of treatment in inoculated and uninoculated persons since 1880. In the first decade dealt with in the paper 3024 people were bitten by animals in Old Austria, of whom 822, or nearly 27 per cent., succumbed to the effects. Statistics from other countries, however, differ greatly in the mortality percentage; some show 19 or 11 per cent., and various German papers give so low a percentage as 7, or even 2. These statistics, however, are not convincing, for not all persons bitten by animals report to the health authorities; the incidence of rabies amongst the biting animals not being too frequent, the population very often attaches no importance to slight injuries, although the latter may prove fatal later on, and statistics are, therefore, often fallacious. But when in 1913 rabies was imported into the district of Vienna strict measures were at once adopted. Coöperation between an up-to-date Board of Health, practitioners alive to the importance of exact reports, and the well-equipped and well-managed Pasteur Institute of Vienna facilitated widespread research. All persons bitten within the boundaries of Vienna were, with hardly an exception, brought to the Pasteur Institute or were reported to it by the police, who had strict orders in that respect. All these persons who had been bitten, even if untreated, were kept under police observation for at least a year, and a regular report was made to the Institute. All persons suspected of rabies, as well as all post mortems where there was any suspicion of the disease, were reported on. Thus

there was no likelihood of a case escaping the knowledge of the Pasteur Institute. As the epizoötic lasted for six and a half years (it was not declared extinct until the second half of 1919) there was a good opportunity for observation. Altogether 977 persons were reported to have been bitten by diseased animals, chiefly dogs. Of these patients eight (0·80 per cent.) died, although they were treated within eight days after receiving the injury, which was always severe. The same number of deaths (eight) occurred in that same period of six and a half years amongst persons who had not received antirabic treatment. The inference, therefore, is that at least 90 per cent. of all persons bitten were reported to the Institute, with a mortality of 0·80 per cent., and that the remaining small numbers of untreated persons had a very high mortality. Otherwise the number of eight deaths is inexplicable. The injuries inflicted by dogs proved to be most dangerous, nearly all the fatal cases belonging to this group. Out of 610 cases bitten by dogs, six died, and two deaths were due to bites by horses. The other biting animals were cats, a monkey, a fox, sheep, goats, and pigs. From his observations Dr. Schweinburg concludes that Pasteur's treatment is clearly a most effective means of counteracting the dangers arising from the bites of animals, and that immediate treatment is almost the only means of saving the victim's life.

Death of Prof. Ferdinand Alt.

Dr. Ferdinand Alt, professor of otology at the University of Vienna, died recently at the age of 53 years after a prolonged illness. He was one of the enthusiastic group of followers, and a favourite pupil, of Politzer. He himself paid much attention to anatomical research and to the pathology of the inner ear; disturbances of musical hearing were the especial subject of his investigations. His work resulted in considerable progress in the surgery of the labyrinth. Of late years his chief interest lay in the instruction of students in otological surgery, and his classes were much frequented by foreigners.

Unrest Amongst Midwives.

When in 1919 a new Midwives Act was under consideration in the National Assembly, coöperation of those concerned—viz., midwives, boards of health, and local administrative boards—resulted in a Bill being drafted, which ensured to this important class of public health workers a certain degree of provision for old age and sickness, and a moderate income out of public funds. But the draft was not destined to become law, and a large number of midwives recently assembled from all parts of the country in Vienna and marched in procession to the Assembly, demanding a definite settlement of their grievances, failing which they threatened to institute a strike. This would entail serious inconvenience to the public, for medical men are thinly scattered in many parts of the Republic. Rural districts are very badly off in this respect, as naturally even small towns offer a much larger scope for medical practice than regions populated only by peasants. Representatives of various corporations supported the demonstration, and a deputation to the Government obtained a solemn pledge that the Bill drafted in 1919 will be brought before the National Assembly as soon as possible, the necessary changes due to the monetary situation of the moment being taken into consideration.

Ignorance and Infant Mortality.

The appalling part played by ignorance and illiteracy in the causation of illness and death is well illustrated in a report prepared for the Austrian Eugenic Society, and dealing with the reasons for infant mortality in certain of the wealthier districts of Austria. This report shows that where schools are normally attended (in industrial districts) the mortality is rarely above 12 per cent. in the first year of life. In rural districts, however, where ancient customs and views of rearing babies are still in vogue, and where illiteracy is almost universal, the figures go up to 17, 21, and 27 per cent., and in some hamlets even 90 per cent. of all babies born die before they complete their first year. Competent investigators have reported that on the Tyrolese and Upper Austrian frontier, in a very rich sub-Alpine district, when the majority of the Austrian population were semi-starved by war, meat, milk, butter, and bread were obtainable in abundance. The mountain population abhors the breast-feeding of babies, which is regarded as indecent, in that animals feed their young in that way. According to their traditions, the new-born baby is fed on a thick soup of flour and sugared water from the first day, and little milk is given. The peasants refuse to entertain the ideas of sterilisation of milk or of breast-feeding. Bottle-feeding is, however, practised, but to excess, as fat children are a source of pride. Qualified nurses are unknown, although the peasants are frequently not only well-to-do but even wealthy. The dangers of tuberculosis are not even believed if explained by a casual medical visitor. The simplest prophylactic measures—e.g., disinfection in scarlet fever or diphtheria—are unknown; the local method of "disinfection," indeed, consists chiefly of closing windows and abstaining from washing when ill. Alcoholic beverages are freely used, and treatment of the frequent ailments of babies, such as summer diarrhœa or acute gastric conditions, is in the hands of old women as ignorant as the mothers themselves.

Jan. 11th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

Ministry of Health: 1923 Budget.

IN 1921 the Ministry of Health and Physical Education had at its disposal about 88 million crowns, and 149 millions in 1922; and 207 millions are budgeted for in 1923. It is interesting to compare the proportionate allotment of expenses in the various budgets of the new Republic. At first central administration and the fight against epidemic diseases required most attention; succeeding budgets displayed a tendency to spend more on social diseases, the epidemics having been practically stamped out. A considerable increase is to be noted under the 1923 heading "State Institutions." Several causes contribute to this increase. First, the fact that the Government has nationalised many hospitals on account of their miserable financial situation; secondly, the establishment of a system of control laboratories all over the territory of the Republic; thirdly, the building of a central Institute of Hygiene in Prague, undertaken with the coöperation of the Rockefeller Foundation, and necessitating the appropriation of nearly 50 million crowns. The item for inland watering-places shows no great increase; State administration of many spas, which were nationalised some years ago, did not prove very satisfactory. The item relating to epidemic diseases shows no change in comparison with previous years; 5 million crowns seem to be sufficient for the protection of the country against the spread of epidemics from neighbouring States. The expenses connected with venereal diseases have risen from 12 million to 14 million crowns owing to a new law which took effect in the middle of 1922. Expenditure on child welfare has steadily increased from year to year. The child welfare centres created by the American Red Cross, and later taken over by the State, are responsible for an increase which brings this item up to 7 million crowns for 1923. Physical education is responsible for a slight increase. Expenditure on sanitation and construction of hospitals is shared between the Ministries of Health and Public Works. The State budget also contains certain provisions for public health purposes; for instance, 17 million crowns are appropriated for patients in general hospitals who are unable to pay their fees, and for whom nobody else is

responsible. The sum of 31 million crowns for nationalisation of hospitals is smaller by 6 millions than the figure for the previous year. The largest increase appears in the salaries of the public health personnel, as a result of the nationalisation of the health service, which was put into effect on Jan. 1st, 1923. The nationalisation law was passed by Parliament over two years ago, but was postponed on account of the necessity for strict economy in State administration. The present Minister of Health, in spite of the opposition of the medical profession, has included the provision of a sliding scale for salaries of local health officers, which will depend, inter alia, on the amount of income from private practice. This provisory arrangement should make it possible for medical practitioners to settle as local health officers in remote country districts, where as private practitioners they have not hitherto been able to earn a living on account of the poverty of the population.

Venereal Disease.

The venereal diseases survey, carried out by the Ministry of Health in 1922, has shown that Carpathian Russia, an autonomous territory closely connected with the Czecho-Slovak Republic, is badly stricken with endemic syphilis. The disease has apparently existed in this territory for many years, being widely spread among the scattered population even in the smallest villages. The annual incidence is about 200 per 100,000 of the population, according to an experimental report made in February, 1921. This is a higher rate than that of Bohemia, where the much greater density of population and the industrial character of the work make the spread of venereal diseases more likely. It is noteworthy that in Carpathian Russia the incidence of hereditary syphilis amongst females is almost double that amongst males in the same district; this phenomenon is apparently due to the higher resistance to all diseases manifested by girls as compared with boys. In the Republic proper the ratio between the number of the three venereal diseases is very constant; approximately 31 per cent. of fresh infections are due to syphilis, 12 per cent. to chancroid, and 57 per cent. to gonorrhœa. In Carpathian Russia, however, 50 per cent. of the total of venereal infections are syphilitic—a fact which seems to indicate a source of infection other than sexual intercourse, probably infection by contact.

The Ministry of Health is planning a special campaign for the eradication of this disease, which is undoubtedly largely responsible for the poverty and slow progress of the district.

Jan. 15th.

Public Health Services.

CONSULTATIONS FOR PANEL PRACTITIONERS.

THE question of consultations in insurance practice was raised by a recent deputation from the Insurance Acts Committee to the Ministry of Health, when it was urged that the insured person ought to be placed in a similar position to that of the private patient. Involving, as it does, the provision of funds to pay consultants' fees, this ideal may not be realised for some time; and, when the money is found, some control must still be exerted by the administrators. A demand which has been heard that insured persons should have free access to specialists apart from their medical advisers is due to a misconception of the proper function of consultants. The medical attendant, along with the patient and his friends, are, of course, the proper people to decide upon the necessity for further advice, the object of which is the speedy recovery of the sick person. In the case of an insured patient, the object remaining the same, there is, however, another party profoundly interested in the duration of illness—namely, the approved society of which the insured person is a member. Memo. 281 sanctioned [1] a reference to the regional medical officers by an approved society on any of their members in receipt of sickness benefit for a period of four weeks. The conference of panel committees expressed a very definite opinion "that nothing should be done to interfere with the responsibility and duty of an insurance practitioner in determining in association with his patients the necessity of a consultation for insured patients." But Memo. 281 gives the initiative to the approved society without necessarily informing either patient or doctor, and it is argued that, whenever a society desires a consultation in regard to one of its members, the suggestion should first of all be made to the patient, who should be left to mention it to his doctor. The safeguard against the misuse of this provision is the actual procedure by which the regional staff of the Ministry of Health deal with the references. In every case the doctor is asked for a report, on receipt of which the regional medical officer decides whether a consultation would or would not serve any useful purpose. It appears that a large proportion of references for consultation are nipped in the bud at this stage.

Clearly, approved societies are not in a very good position to choose the appropriate cases for consultation, and in general the insurance practitioner can be trusted to decide upon this necessity. He is indeed only too glad to secure expert advice. At present he has mainly to depend on the good offices of voluntary hospitals, and the need of a panel of consultants grows from day to day. The requisite control could be secured through the present regional staff, who would presumably see the patient first, except in case of urgency. Meanwhile much expert advice and treatment is provided at the hands of insurance doctors themselves in hospital, more especially in the smaller towns and rural areas where the cottage hospital is staffed by local practitioners. Major operations, as well as electrical and X ray treatment, are frequently undertaken there without fee and with only a nominal charge on the part of the hospital. The sense of grievance that these extra services must be given without extra remuneration is mitigated by the fact that the work done in the operating theatre and X ray room adds zest and interest to routine clinical work.

[1] THE LANCET, 1922, ii., 633.

THE WORK OF THE LONDON PANEL COMMITTEE.

The election of representatives to a panel committee is held, as a general rule, in every second year, the next election occurring in June, 1923. The London Panel Committee, which safeguards the interests of 1500 practitioners in the London area at an administrative outlay which has averaged 0·45 penny per insured person during the last three years, while issuing a monthly gazette, has received many suggestions for consideration whereby the medical benefit regulations may be so amended as to meet the desires of panel practitioners in the London area. In a recent issue of its *Gazette* the London Panel Committee reminds practitioners that many of the provisions contained in the regulations are unalterable without amendment of the Acts themselves. The inclusion of the word "preventive" in the title of these Acts definitely included all measures of a preventive nature and thus brought vaccination against small-pox as an obligatory service, for it cannot be contended that it is a service beyond the competence and skill of a general practitioner. In cases where a complaint has been lodged against a practitioner, the advice and assistance of the Panel Committee's solicitors are available free of charge, and the Panel Committee itself is assisted in its work by three standing subcommittees. In addition to this work, the Panel Committee appoints representatives to certain outside bodies, the expenditure on which cannot be defrayed out of the statutory income of the committee. It is not a little remarkable that busy London practitioners can be found who are willing to give their time freely to

arduous administrative work. The London Panel Committee has rightly taken pride in its ability to speak for a large section of insurance practitioners. Amongst its members have been found, from the first, men of wide experience politically and professionally who have brought enthusiasm to the consideration of the future development of the insurance service. Valuable memoranda have been issued setting out schemes for the smooth working of the insurance medical service and particularly for the better administration of the Insurance Acts. We are glad to learn that the London Panel Committee is now effectively coöperating with the Insurance Acts Committee of the British Medical Association in its conferences with the Ministry of Health.

THE MEDICAL SERVICE OF THE NATIONAL HEALTH INSURANCE ACTS.

A conference has been called, by the Insurance Acts Committee of the British Medical Association, of bodies interested in the medical service of the National Health Insurance Acts for Tuesday next, Jan. 30th, at 11 A.M., in the Council Chamber of the Guildhall, London. The question of the efficiency of the service now rendered will be introduced by Sir Thomas Neill, chairman of the Executive Committee of the National Conference of Industrial Approved Societies. A debate on such practical matters as surgery hours and accommodation, size of panels, and provision for emergency treatment will take place.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. H. L. Penny is placed on the Ret. List with rank of Surg. Rear-Admiral.

The following appointments have been made: Surg. Lt.-Cmdrs. L. A. Moncrieff to *Birmingham* for Trooping trip; R. J. Inman and H. E. Y. White to *Britannia* for sick quarters, Dartmouth; and L. S. Goss to *Thunderer*; Surg.-Lts. R. W. Mussen to *Cyclamen*, and W. A. Jolliffe to *Calliope*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. A. L. Howell retires on ret. pay on account of ill-health caused by military service, and is granted the rank of Col.

Capts. C. E. Petley and C. K. G. Dick retire, receiving a gratuity.

Capt. J. C. Burns is placed on the half-pay list on account of ill-health.

ARMY RESERVE OF OFFICERS.

Col. T. P. Jones (late R.A.M.C.), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Col. H. A. L. Howell (late R.A.M.C.) ceases to belong to the Res. of Off. on account of physical unfitness.

Lt. C. C. H. Chavasse (late 4th R. Warwick. R., Spec. Res.) to be Lt.

TERRITORIAL ARMY.

Lt.-Col. T. Donovan resigns his commn. and retains the rank of Lt.-Col. with permission to wear the prescribed uniform.

Lts. J. Bowen-Jones and G. Nicholson resign their commns. and retain the rank of Lt.

The undermentioned relinquish their commns.: Maj. F. R. M. Heggs; Capts. R. Hargreaves, S. A. S. Malkin, and R. S. Weir.

Capt. F. J. Nattrass relinquishes his commn. and retains the rank of Capt.

Capt. F. W. Martin (late R.A.M.C.) to be Lt., and relinquishes the rank of Capt.

Capt. H. M. Pentreath, having attained the age limit, is retired, and retains the rank of Capt.

Capt. G. N. Anderson, from Sanitary Companies, to be Capt.

General Hospitals: The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated: Lt.-Cols. W. Pasteur and A. H. Tubby (granted the rank of Cols.), W. G. Richardson, and H. B. Angus; Majs. (Bt. Lt.-Col.) Sir H. F. Waterhouse, (Bt. Lt.-Col.) R. A. Bolam (granted the rank of Lt.-Col.), S. H. C. Martin, J. D. Wardale, R. P. R. Lyle, J. W. Leech, W. D. Arnison, and T. M. Allison; Capts. Sir A. D. Reid (granted the rank of Lt.-Col.), (Bt. Maj.) W. C. Bosanquet (granted the rank of Maj.), E. R. Carling (granted the rank of Maj.), F. H. Humphris, T. G. A. Burns, H. R. D. Spitta, H. J. Marriage, and E. W. Hedley.

Correspondence.

"Audi alteram partem."

THE TREATMENT OF EARLY PULMONARY TUBERCULOSIS IN THE YOUNG ADULT.

To the Editor of THE LANCET.

SIR,—Those of us who are interested in tuberculosis work feel grateful to Dr. Lillingston for his able and lucid contribution in your issue of Jan. 13th. He points out with no uncertain voice that the so-called "simple life" is fraught with the greatest danger. The patient who is for the time being his own physician is not sufficiently "educated" to control his exercise and rest, with the result that in the majority of cases auto-inoculation gets the upper hand and the disease progresses. When this pet method of treatment has failed, and the case has become a nuisance to the family physician and others the patient is recommended to go to a sanatorium for a *few weeks* instead of a *few months*. Usually the case is then in the third stage, and arrest wellnigh impossible.

In regard to the so-called specific treatment generally, I am glad to read that Dr. Lillingston believes that they act chiefly by suggestion and by allowing the physician to control the movements of his patient. Dr. Prest is rather premature when he talks of colloidal calcium as a specific. If so, it should show results not only in first stage cases (and the majority of these do well on rest and fresh air treatment), but also in those where the disease is more advanced. I have now given this remedy a trial in 20 cases where sanatorium treatment (of 3 to 18 months' duration) had not produced any definite benefit. These cases were in the second or third stage of the disease, and the treatment was carried out in accordance with instructions as laid down by Dr. Prest in his original article. But it is very disappointing to have to record no material improvement either in signs or symptoms in most of these cases. There was no disappearance of tubercle bacilli in any of the patients' expectoration. The very slight improvement recorded in only three cases could easily be accounted for by the vagaries of this remarkable disease. Surely, then, it is hardly possible to call this remedy a specific in the proper sense of the word.

But there is one method of treatment first advocated by Sir Robert Philip many years ago which I think has not received the support it deserves. I mean the per-cutaneous method of tuberculin treatment by Moro's ointment. I have now used this method in certain type of cases for the last three years with very encouraging results. It is particularly indicated when a certain stage of convalescence has been reached and when the organism seems satisfied to live on friendly terms with the tubercle bacilli. Tuberculin therapy then seems to give the coup de grace to the more or less dormant and inactive bacilli, and the few remaining symptoms including the sputum disappear. The remedy is a perfectly safe one, and there is little or no danger of lighting up a quiescent focus. In certain forms of so-called surgical tuberculosis, such as glands and superficial sinuses, the results are indeed striking.

In regard to the treatment of hæmoptysis (large or small) I entirely agree with Dr. Lillingston when he condemns the use of morphia generally. For several years now I have been using calcium chloride intravenously (or intramuscularly in weaker solutions) and it is undoubtedly the remedy par excellence. Used with due care it is not such a dangerous drug as some physicians seem to think.

I am, Sir, yours faithfully,

FELIX SAVY.

Grampian Sanatorium, Kingussie, Jan. 20th, 1923.

To the Editor of THE LANCET.

SIR,—I can hardly think that Dr. Lillingston is really familiar with modern technique in the therapeutic immunisation or chemotherapy of either pulmonary

or other forms of tuberculosis. If he were it seems to me very unlikely that he could state that immunisation acted merely by a process of suggestion. He must have used very non-specific antigens or very impotent intravital germicides. It seems perhaps invidious for me to suggest that he might read two small books in English instead of voluminous tomes in French or German and find there that the subject had already been disentangled.

I am, Sir, yours faithfully,

W. M. CROFTON.

University College, Dublin, Jan. 18th, 1923.

To the Editor of THE LANCET.

SIR,—The correspondence arising out of Dr. Claude Lillingston's paper in your issue of Jan. 13th, while both interesting and suggestive, appears to me to show rather loose thinking as to some of the essential factors underlying the treatment by rest and graduated exercise respectively. It seems to be assumed that graduated exercise only acts by inducing auto-inoculations and that the absence of temperature after such exercise depends on "tolerance" to auto-tuberculin. May I suggest that the case that does best on graduated exercise is one in which the lesions are so well shut off by cellular reaction and proliferation that the auto-inoculations are minimal. Such a case is usually one of reinfection in a relatively resistant subject, and owing to his power of sharp reaction, is easily diagnosed and passes for an "early case." What such a patient requires is re-education in the respiratory function which has been partially lost during the illness that accompanied his reinfection. He can stand this re-education *because his auto-inoculations are minimal;* and his gain in weight, condition, and general health is perhaps as much the result of increased metabolism and good food as of the small auto-inoculations that may occur. It is a mistake to suppose that such a man is "tolerant." An injection of tuberculin is usually sufficient to prove that patients of this type are really "intolerant" or "allergic," a fact to which they probably owe their power of shutting in their tuberculous foci.

Nobody who has seen the results of graduated exercise in sanatoria run on "Marcus Paterson" lines can doubt the value of this form of treatment in suitable cases when carefully controlled by temperature records. But for cases of a less "balanced" type, where the lesions are still in an exudative stage, and auto-inoculations are easily induced and considerable in amount, treatment by rest is imperative and even graduated exercise may well be dangerous. There is a danger that the advocates of "rest" on the one hand and of "exercise" on the other may come to be regarded as belonging to opposite camps. Surely it is for the skilled physician to make use of both "rest" and "exercise" as his instruments for the control of auto-inoculations and the graduation of metabolism to meet the needs of the individual case.

I am, Sir, yours faithfully,

S. L. CUMMINS.

University College, Cardiff, Jan. 20th, 1923.

SMALL-POX AND AMAAS IN SOUTH AFRICA.

To the Editor of THE LANCET.

SIR,—A reference by Dr. J. A. Mitchell, Chief Health Officer, Union of South Africa, in THE LANCET of Oct. 14th, 1922, to an outbreak of small-pox at Kimberley in 1882, induces me to give a short record of experiences in that epidemic. When small-pox began, the mine owners feared that if the disease was mentioned the farmers would take fright and not bring in fuel. The term "chicken-pox" was adopted and Dr. Jameson clung to this diagnosis for a time and then shifted to pemphigus, although a lady in Cape Town was informed it was small-pox, but it would not do to frighten people, &c. Meanwhile the epidemic was devastating the kafirs, who were dying in scores, as well as unvaccinated whites who believed Dr. Jameson's diagnosis of chicken-pox or pemphigus. I wrote to the press and pointed out the serious position—that the disease was virulent small-pox, but failed in my efforts to convince the public. A deputation of doctors from Cape Town arrived and examined the cases, but left without establishing a definite diagnosis.

I saw that some more decisive and impressive step must at once be taken. I despatched pieces of skin from a white man unvaccinated who had died from the disease (one to *The Lancet* and one to the *British Medical Journal*), and both authorities stated it was virulent small-pox and warned the public about instant vaccination. I took the photo of a baby who was born covered all over with small-pox, and forwarded it to the home medical papers. One man remarked of this that it ought to be reprinted in every book dealing with small-pox.

The verdicts of *The Lancet* and *British Medical Journal* impressed the members of the Kimberley town council, who requested me to vaccinate all and sundry in Kimberley. At the time I had no lymph but remembered a baby who had been vaccinated. From the baby I got three or four tubes of lymph—the vesicles were at the seventh day. I vaccinated four young kafir boys who were closely examined and seemed as pure in blood as young spring bucks on the veldt—a relay of these boys was always kept up. Well, in brief, I vaccinated 10,000 kafirs in six weeks, when the epidemic was stamped out. On one day a hospital would become empty and not another case would arrive. Three scrutineers were appointed to watch the vaccination. No manager complained I hurt his boys; there were no septic arms and no deaths. Dr. Jameson, during the epidemic, was prosecuted for admitting a contagious disease into a general hospital. A court case resulted, and the usual bickerings took place. A witness was put into the box who swore I treated his wife for cancer when, in fact, she was pregnant. The magistrate, seeing me in the court, stated that as this was sprung upon me unawares I could reply. I stated it was absolutely false. I looked up the case afterwards, and found I was treating her for pregnancy with Hewlett's bismuth and pepsin mixture.

Towards the close of the vaccination I asked Mr. Denis Doyle, the sanitary inspector, to bring in all and sundry still unvaccinated, and he succeeded one morning in producing 1000 natives composed of every type of aboriginal in South Africa. These were vaccinated on a Sunday morning, and with that the epidemic closed.—I am, Sir, yours faithfully,

WM. ROBERTSON.

Mossel Bay, South Africa, Nov. 14th, 1922.

SULFARSENOL IN THE TREATMENT OF SYPHILIS.

To the Editor of THE LANCET.

SIR,—Dr. M. W. Browdy in his letter to THE LANCET of Jan. 20th, commenting on my article of Jan. 13th, stated that those cases of syphilis that react badly to arsenobenzol compounds can be still treated by these compounds if certain precautionary measures are adopted, such as avoiding exposure to cold, allowing a certain amount of food before injection, and by giving contramine intramuscularly. No one can dispute that these precautions are of great help, but several of my patients have taken all these safeguards before an injection, besides glucose given by the mouth or intravenously, and also injections of adrenalin, and still had severe after-effects. When it was found that these cases had no after-effects following sulfarsenol, we had to conclude that this was the best drug to give them. In the complications of gonorrhœa I have found that neither intramine nor contramine has anything like such a dramatic and permanent effect as sulfarsenol. As regards contramine being safer, a 0·12 dose of sulfarsenol contains about ½ gr. of arsenic, and can be safely given to a child.

I am, Sir, yours faithfully,

Harley-st., W., Jan. 22nd, 1923. F. CARMINOW DOBLE.

RECURRENT PYREXIA IN PHTHISIS.

To the Editor of THE LANCET.

SIR,—Dr. R. C. Wingfield, in his article on Secondary Infections Complicating Pulmonary Tuberculosis in your issue of Jan. 13th, recognises a clinical type of case where sudden attacks of pyrexia are a feature not due to tuberculous auto-inoculation coinciding with increased exercise. I have seen these cases and I agree they are unassociated with exercise. It seemed to me the pyrexia might be assigned to a sudden increase in toxic absorption through improper drainage of some cavity, probably, in attempting to heal, the mouth of a cavity may become partially occluded, in which case the free exit of sputum would be hindered. As soon as the tension in the cavity was sufficient this condition of affairs would be relieved, there would be an increase in sputum, and the temperature would fall. I knew a case with a large cavity where a marked decrease in expectoration would invariably precede one of these attacks.

I am, Sir, yours faithfully,

C. B. WILSON, M.R.C.S. Eng.

San Remo, Italy, Jan. 15th, 1923.

DANGEROUS DRUGS ACT, 1920.

To the Editor of THE LANCET.

SIR,—While reserving any detailed criticism of the Act for a paper I am to shortly read before the Medico-Legal Society, the following brief comments may be of service to my professional brethren.

1. Regulation 6, Section VII., lays down inter alia that "a prescription for any of the drugs shall only be dispensed .... if the person dispensing the prescription is *acquainted* with the signature of the medical practitioner, &c., by whom the prescription purports to be given, or is *acquainted* with the *person* for whose use the prescription is given and has no reason to suppose that the prescription is not genuine." (Words omitted are unnecessary to my point; italics mine). Now it is not inconceivable that both doctor and patient may be unknown to the chemist, hence the advisability of carrying a sufficient supply of these emergency drugs when travelling beyond one's own district, and since no doctor may "prescribe" for himself the same precaution applies when he takes his family on holiday.

2. Although there is no obligation placed upon the non-dispensing doctor to keep records, yet since the script is retained by the chemist the patient on a subsequent visit will not be in possession of the prescription, and hence the practical need of preserving a copy as an aid to memory.

3. The dispensing doctor. Regulation 9, which enacts the keeping of records beyond the day book, will be recognised by anyone acquainted with the distractions incidental to the life of a G.P. to be an impossible burden and, as I hope to show in my paper, is doomed to failure from mere vis inertiæ.

As I have found much misunderstanding abroad and have been sought in advice on several occasions, may I add that (*a*) any doctor conforming to the regulations as to prescribing may order any drug and in any strength he desires; (*b*) that he is unfettered in his personal use of the drugs as local anæsthetics; and (*c*) that he can avoid all trouble in obtaining supplies by ordering from a wholesale house.

Lastly, since the present regulations are only a beginning, and envisaging the more drastic legislation which prevails in the United States of America, and which supplies a stimulus to "reformers" on this side, would it not be well that a watching committee be set up to guard the interests and conveniences of the profession and more especially of the already overburdened general practitioner? In these cases not only is prevention better but easier to achieve than cure. The possibility and hope of being helpful is my apology, Sir, for this incursion upon your space.

I am, Sir, yours faithfully,

H. A. BURRIDGE.

King's College Hospital, S.E., Jan. 20th, 1923.

CŒLIAC DISEASE.

To the Editor of THE LANCET.

SIR,—I have followed with interest the contributions of Dr. Reginald Miller and his collaborators to your columns on the subject of cœliac disease. My interest in the subject has been further stimulated by the study of a young adult patient (under the care of Dr. A. F. Hurst) presenting most of the classical features of the disease, and it has occurred to me that a description of the case might possibly help to elucidate the hitherto obscure problem of its pathogenesis. In his paper on a Fatal Case of Cœliac Infantilism,[1] Dr. Miller concludes "that cœliac disease is independent of organic changes" in pancreas, liver, or intestine, and he bases his opinion on an analysis of the only four recorded autopsies. Curiously, however, no specific mention is made in any of the post-mortem reports of the state of the lacteals and the thoracic duct, notwithstanding that these constitute an important part of the fat-absorbing apparatus. In the case described hereunder the symptoms resulted from obstruction to the lacteals, and I believe that it is in the lacteals or thoracic duct that the lesion of cœliac disease must be sought before it can be finally decided that the disease occurs independently of any organic change. It must be admitted that the lymphatic system of the bowel and mesentery very rarely receives close attention during the routine performance of autopsies, and when the viscera have been removed in the customary way by a post-mortem room attendant a satisfactory report on the system becomes almost impossible.

A young woman, aged 23, gave a history of attacks of diarrhœa since she was a baby. In recent years they had become more continuous and sometimes she passed as many as six or more stools in a day. From the age of 15, whenever she got over-tired, during the menstrual periods, and particularly when the diarrhœa was bad, she had attacks of tetany. She had not lost weight. When she came under observation it was discovered that the "diarrhœa" consisted in the passage of enormously bulky, semi-fluid stools of a porridgy consistency, greasy and rancid, and containing an obvious excess of intimately mixed fatty material. The patient was of small stature, but well proportioned and looked younger than her years. The abdomen was full, especially in its lower half, and felt unusually firm and doughy. On account of persistent tenderness in the right iliac fossa a laparotomy was performed and an actively inflamed appendix was removed. At the operation the lacteals were seen to be in a remarkable state of dilatation, standing out as tortuous, white cords; the mesenteric glands were enlarged and many of them were caseous. There was, however, no tuberculous peritonitis, and the appearance of the bowel did not suggest the presence of any ulceration. In brief, the case was one of tabes mesenterica with very extensive obstruction to the lacteals. The symptoms which had developed as the result of this obstruction and the character of the stools were closely similar to those described in cœliac disease, and tetany—a complication of cœliac disease—was also present. After the operation the patient was treated for a year as a case of tuberculosis. On withdrawing fats from her diet the stools were reduced to one or two per diem and became normal in consistency and colour, but remained abnormally bulky, conforming closely with the description of the stools in Dr. Miller's cases of non-diarrhœic cœliac disease (THE LANCET, 1923, i., 72). There was no recurrence of tetany, and the patient is now leading a normal life, though it is necessary for her carefully to restrict her fat-intake. The history suggested that the trouble had been present for many years, possibly even from infancy, without the patient manifesting any other signs of tuberculous disease.

When two diseases produce almost identical symptoms it is difficult to avoid the conclusion that they possess some common pathological factor, and on the analogy of cases of this type one feels tempted to prophesy that in the next fatal case of cœliac disease some macroscopic or microscopic lesion of the lacteal system will be found. The lesion need not necessarily be tuberculous, and, in fact, the complete absence of evidences of tuberculosis is claimed as a characteristic of cœliac disease. There is, however, the very frequent incidence of fever to suggest an infective origin, and one cannot refrain from remarking on the

[1] THE LANCET, 1921, i., 743.

comparatively good tendency to recovery with healing in tabes mesenterica and on the closely similar abdominal signs in the two diseases. It must be a comparatively rare occurrence for tabes mesenterica to obstruct the lymphatics so completely as to give rise to steatorrhœa of a copious kind. In 1855 Gull wrote a paper in the Guy's Hospital Reports on Fatty Stools from Disease of the Mesenteric Glands. In this paper he states that "the normal absorption of fatty matters is prevented from two causes: either from a defect in the digestive or emulsifying processes, or from disease of the absorbent system," and he proceeds to describe the differences in the appearance of the stools according to their respective pathologies. Of the stools due to defective absorption on account of disease of the mesenteric glands he remarks, "The evacuations were pultaceous or liquid, of a dull chalky colour, frothing like soap when a stream of water was poured on them."

It does not necessarily follow that lacteals seen to be dilated in life in a patient on an ordinary diet would remain conspicuous after death. In Gull's case the post-mortem report includes no account of the lacteals, although the mesenteric glands were caseous. In all of the four cases referred to by Dr. Miller an acute illness preceded death, and in two at any rate treatment had included a fat-free diet.

I am, Sir, yours faithfully,

J. A. RYLE.

The Warden's House, Guy's Hospital, Jan. 22nd, 1923.

PYLORIC STENOSIS OF INFANTS.

To the Editor of THE LANCET.

SIR,—We have received a letter from Messrs. Nestlé's and Anglo-Swiss Condensed Milk Co., pointing out to us that a sentence in our recent paper published in THE LANCET of Jan. 13th (p. 64, par. 3) is open to misinterpretation. The sentence is as follows: "If soapy stools are present, then milk with a poor fat content—e.g., skim milk or Nestlé's condensed sweetened milk—is used as previously indicated," and it is pointed out that this might convey the impression that Nestlé's Condensed Sweetened Milk is deficient in fat.

We would like to say, however, that the words "as previously indicated" are a reference to the fact that it is necessary to dilute the milk considerably in order to produce a food with a poor fat content. It would perhaps have made our meaning clearer and left no possible room for doubt if the sentence had read: "If soapy stools are present, then milk of a poor fat content—e.g., skimmed milk or *highly diluted* Nestlé's Condensed Sweetened Milk is used as previously indicated." We are, Sir, yours faithfully,

LEONARD G. PARSONS.
SEYMOUR BARLING.

Birmingham, Jan. 19th, 1923.

SOME THOUGHTS ABOUT ENDOCRINOLOGY.

To the Editor of THE LANCET.

SIR,—There are three classes of people interested in endocrinology: 1. Scientific investigators with critical minds who observe accumulated evidence with dispassionate interest. 2. Persons engaged in attempting to cure disease whose optimism and eagerness to help sway their deficient critical sense until they seize at any straw which seems to point towards success. There is often a love of romance in these people which makes them delight in spinning a misty intellectual mesh which completely obscures any possible facts. This is a large and sincere class, including a mass of general practitioners, most dispensing chemists, a number of consultants, not a few journalists, many oriental medical men. 3. Persons who have realised the commercial possibilities in exploiting the human weakness characteristic of the last-named class. Certain of the firms placing "endocrine" preparations on the market belong to this last class.

Nothing which Dr. Swale Vincent said at the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, reported in your last week's issue, was in any way shaken by subsequent speakers; it must be admitted that whether or not his views place an undesirable damper on enthusiasm, whether or not destructive criticism is required, neither fellow observers nor trade proprietors have been able to bring a counter case. One of the longest speeches came from a practitioner who believed in parathyroid. Few reputable firms have placed on the market a parathyroid preparation with the claim that it is potent. Some of the parathyroid extracts sold contain no parathyroid at all, and if they have any effect owe it to traces of thyroid present in them. The speaker referred to asked us to swallow not only parathyroid; but also tales of focal sepsis more incredible than those put forward at even purely clinical discussions. It may be asked how can the general practitioner carry out clinical tests of supposed remedies? It can readily be done if he has the courage to use controls. Every clinical inquiry must have controls—i.e., parallel with each attempt to produce an effect must be a case under absolutely the same conditions with simply *one factor* eliminated. If, in the work on varicose ulcer quoted, there had been a series of cases which had been similarly treated, save that sugar tablets instead of parathyroid had been given, there would be some basis for discussion. The speaker's laboratory companion maintained a lamentable silence as to his method of estimating calcium, an extremely difficult chemical investigation about which the most distinguished chemists are sceptical. The same gentleman's silence as to how he knew he was actually employing parathyroid extract was not impressive.

The exploitation of the public by those commercial firms who pour out inert preparations at high figures should be strenuously fought. The money spent by the public in paying for them and by the proprietors in marketing them would re-build and endow the London hospitals.—I am, Sir, yours faithfully,

Jan. 13th, 1923. A PHYSICIAN.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on Jan. 9th 17 cases were considered and £250 voted to 13 applicants. The following is a summary of some of the cases relieved:—

M.D. Brux., L.S.A. Lond., aged 62, married. Practised in London for 20 years. Owing to chronic neurasthenia and bronchitis, also general weakness, is unable to concentrate on work. Applicant asked the Fund to help towards board and lodging, which up to the present friends provided. He has also been allowed 4*s*. per week pocket-money. Voted £26 in 12 instalments.

M.D. Dub. 1866, aged 61, married. Practised in East London. Owing to severe nephritis with general arterio-sclerosis has been unable to attend properly to his practice, and is now reduced to a small panel bringing in 5*s*. per week and private practice about the same amount. The rent of 16*s*. per week is reduced to half this amount by letting. Voted £26 in 12 instalments.

Widow, aged 50, of M.D. Edin. who practised in Sheffield and died in 1906. Applicant used to take post as companion help, but owing to ill-health has had to give this up. The Guild has been helping this case to the extent of 5*s*. per week, and the Fund has now voted the sum of £12. This case has been relieved five times. Total £45.

Widow, aged 41, of M.R.C.S. Eng. who practised at Liverpool and Swansea, and died in 1914. Owing to ill-health applicant is dependent upon her mother, with whom she lives, and the education of her daughter is paid by various grants from different sources. Applicant has been relieved by the Fund eight times to the extent of £108, and at this meeting was voted £18 in 12 instalments.

Daughter, aged 63, of F.R.C.S. Eng. who practised in London and died in 1885. Through ill-health this applicant has had to give up her profession as nurse and has only a small income of £48 per annum, out of which she has to pay £26 for rent. She has been relieved twice before by the Fund, total £29, and has now been voted £18 in 12 instalments.

Widow, aged 81, of M.R.C.S. Eng. who practised at Devonport and died in 1875. Through the leases of her houses falling in and the death of her son-in-law has found it extremely hard to live on a small income. Her married daughter allows her £45 per annum, and from investments she receives £12. For ground-rent and insurances she has to find £28 per annum. Relieved four times to the extent of £48, the last £12 in 12 instalments January, 1922. The Committee decided to increase this amount, and voted £26 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., 11, Chandos-street, Cavendish-square, W. 1.

Obituary.

HORATIO PERCY SYMONDS, F.R.C.S. EDIN., M.A. OXF.,

LATE SURGEON TO THE RADCLIFFE INFIRMARY, OXFORD.

WE regret to announce the death of Mr. Horatio Percy Symonds, the well-known Oxford surgeon, which occurred at his home in Oxford on Jan. 16th, and removed one of the best-known personalities from the city.

Horatio Symonds's medical pedigree was a notable one; he was the seventh of his line in uninterrupted descent to practise surgery. The last three of these carried on their work at Oxford, his father, Frederick Symonds, a man of great character and repute, serving many years as surgeon to the Radcliffe Infirmary. H. P. Symonds, or "Young" Symonds, as he continued to be styled by his contemporaries, was educated at Rugby, and, being destined to become a surgeon, was apprenticed to Mr. Winkfield, surgeon to the Radcliffe Infirmary, in 1867. After serving there as a dresser for two and a half years, he went to University College, London, where he came under the influence especially of Berkeley Hill, whose house surgeon he became, Marcus Beck, Vivian Poore, and John (now Sir John) Williams. As a student he went out as a dresser to the Franco-German War in 1870. Returning qualified to Oxford in his early "twenties," he immediately entered his father's practice, and soon stood for election to the staff of the Radcliffe Infirmary, obtaining election in 1878 as honorary surgeon. His zeal and energy in all departments of practice won him prompt recognition, which grew as years went on. Surgery was his bent, and having seen its practice in pre-antiseptic days, his impressionable mind appreciated the great possibilities under conditions of antisepsis. He followed Lister's work with avidity and put into practice in the Radcliffe Infirmary the embodiments of the new teaching. His surgery was essentially bold, original, and successful. He was no mere operator, for he watched his patients with unbroken attention so long as they remained under his care. His diagnosis, born of continuous experience, was accurate and quick, illumined often by a shrewdness that was unsuspected in him. His whole life and work was devoted to the Radcliffe Infirmary, many of whose patients and staff still remember the unremitting toil he gave in its service. He had no hobbies except his work, and took few holidays. In later years he used to go away to Brighton for a few days now and then, but frequently came back before he was expected, to take up again the work he loved best. The enforced retirement from practice in 1914 owing to arthritis was the harder to bear because of his devotion to work, and few things pleased him better in his last years than to hear the news and gossip of the infirmary.

He will be remembered by those who knew him in his best days as a dapper, young-looking man (even in sickness and age this young fresh look did not forsake him), immaculately dressed, with a silk hat and a white flower in his coat. He scarcely ever walked, and therefore was seldom seen far from his carriage, a brougham drawn by two chestnut thoroughbreds. His speech was clear and to the point, and his manner especially to patients brusque and apparently offhand; but that it only served to hide kindness of heart the love of his patients is sufficient testimony. Amongst older Radcliffe patients it is still a matter of pride to have been operated upon by Mr. Symonds.

One of his colleagues writes: Symonds's appointment coincided with the period when Lister's teaching and practice of antiseptic surgery was beginning to bear fruit in London and the provinces, and it was enthusiastically and seriously taken up by him. His mastery of its principles soon enabled him to undertake successfully operations which a few years earlier would have been considered quite unjustifiable because of the risk to life involved. A constant reader of the current surgical literature of the day, he was always to the fore with new methods and ideas and ever ready to put them into practice. Never standing still at a time when great changes were coming over surgery, he kept the surgical work of the hospital not only abreast of the times but in front of that of many provincial hospitals. A bold, skilful, and speedy operator, he was the pioneer at Oxford of many of the operations that are now being performed daily. More than one of his house surgeons have spoken of his unfailing punctuality, and all his colleagues would agree as to his driving force in the conduct and general management of the infirmary. Many of his house surgeons will remember with gratitude the kindly help and encouragement and the opportunities he gave them of acquiring a practical knowledge of surgery. He was a most regular attendant at our medical meetings in Oxford in connexion with the Oxford Medical Society and the Oxford division of the British Medical Association, and was very helpful both in reading and showing cases and taking an active share in the discussions. In 1904, when the British Medical Association met at Oxford, he was President of the Surgical Section. In the early days of the war he was struck down with arthritis of the hip, which progressed so rapidly that he was unable to get about and was compelled to resign his appointment as surgeon to the Third Southern General Hospital, work for which he was eminently suited. As this disease progressed it became more and more impossible for him to get about, and for the last few months of his life his sight failed him. He fought against these increasing infirmities with great courage.

ALFRED MAXWELL WILLIAMSON, M.D., C.M., B.SC. EDIN.,

MEDICAL OFFICER OF HEALTH FOR EDINBURGH.

THE death of Dr. Maxwell Williamson at the age of 63 has robbed the public health service of an able administrative officer. He was born at Leith in 1859, the son of a local medical man, and after training as a nautical engineer took up medicine and qualified at Edinburgh in 1888. Three years later he became assistant to Sir Henry Littlejohn, whom he succeeded on his retirement in 1908, after having in the meantime served the city well as its chief sanitary inspector. Thus when Williamson became medical officer of health he found the administrative machinery already established on a strong basis. Being a man of unbounded energy, he expected everyone of his staff to be equally alert, and his efforts at controlling sudden outbreaks of dangerous infectious disease were conspicuous by their thoroughness. But he was seldom in the limelight of public health conferences; he did not like public functions, and preferred to spend his time leaving good foundations of administrative work behind him. He had high ideals, and he never rested until he gained his way. The completeness of the child welfare and venereal diseases schemes in Edinburgh bear witness to his thoroughness. In tuberculosis he did not have to create the machinery, for the tuberculosis scheme, founded by Sir Robert Philip, was taken over by the municipality as a going concern and formed an excellent groundwork of success. Williamson's striking reports on housing compelled the local authority to take drastic action with improvement and reconstruction schemes, and before he died he had set the wheels in motion for dealing with one of the worst areas in the city. On temperance questions he was an emphatic reformer, and many slum-dwellers will miss the Sabbath mission which he conducted with great regularity. Students now scattered throughout the world have Dr. Williamson to thank for a good grounding in sound administrative ideals.

Dr. Williamson remained unmarried, giving his whole time and interest to the fulfilment of his office.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

Surgery.—G. G. Brown, Charing Cross Hospital; M. P. Parker, Royal Free and St. Mary's Hospitals; R. F. A. Philpott, St. George's Hospital; H. M. White, Leeds.

Medicine.—B. Basuny (Section I.), Cairo; L. A. Daly (Section II.), St. Bartholomew's Hospital.

Forensic Medicine.—H. J. Adams, Middlesex Hospital; B. Basuny, Cairo; C. S. Laurence, Sydney and Bristol.

Midwifery.—B. Hart, Sheffield; W. M. Jones, St. Bartholomew's Hospital; C. S. Laurence, Sydney and Bristol.

The diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: G. G. Brown, M. P. Parker, and R. F. A. Philpott.

UNIVERSITY OF LONDON.—A course of eight lectures on the Physiology of the Cortex as Investigated by the Method of Conditioned Reflexes will be given by Dr. G. Anrep at University College, Gower-street, London, W.C. 1, at 5 P.M., on Fridays, from Jan. 26th to March 16th. Attendance at this course is recognised in connexion with the B.Sc. (Honours) degree in Physiology. Admission is free.

QUEEN CHARLOTTE'S HOSPITAL: MIDWIFERY LECTURES.—A series of lectures in midwifery subjects will be given by the members of the hospital staff at 5 P.M. on Thursdays, commencing on Feb. 1st, when Dr. C. Hubert Roberts will speak on Ante-partum Hæmorrhage. On Feb. 8th Dr. J. Bright Banister will discuss Heart Disease in Pregnancy. Mr. Aleck W. Bourne will deal with Acute Fevers in Pregnancy on Feb. 15th; and Dr. Trevor B. Davies with Clinical Aspects of Abortion on Feb. 22nd. On March 1st Dr. Louis C. Rivett will lecture on Delay in Labour; and on March 8th Dr. Leonard Phillips on Common Unrecognised Difficulties in Obstetrics. These lectures are intended for students and practitioners and are free.

MEDICAL SOCIETY OF LONDON.—The programme for the second half of the session has now been issued. On Feb. 12th, at 8.30 P.M., a discussion on Psycho-therapeutics will be opened by Dr. F. Farquhar Buzzard, followed by Dr. William Brown, Dr. M. B. Wright, Dr. S. A. K. Wilson, Dr. David Forsyth, and others. On Feb. 26th, at 8.30 P.M., a discussion on the Various Methods of Treatment of Cancer of the Tongue will be opened by Mr. James Berry, followed by Mr. W. Clayton Greene, Mr. Wilfred Trotter, Mr. G. Gask, Mr. Gordon Taylor, Mr. A. Edmunds, Mr. H. S. Clogg, and others. On March 12th, at 8.30 P.M., a discussion on the Value of Laboratory Investigation in Diseases of the Liver and of the Pancreas will be introduced by Dr. W. R. Langdon Brown, followed by Prof. F. S. Langmead, Dr. Mackenzie Wallis, Dr. J. M. McNee, Dr. E. A. Dodds, Dr. G. A. Harrison, Mr. H. E. Griffiths, and others.

The Lettsomian lectures on Carcinoma of the Rectum will be delivered at 9 P.M. on Feb. 19th, March 7th, and March 26th, by Mr. W. E. Miles. The annual oration will be delivered on May 14th by Dr. J. W. Carr.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship of Medicine have arranged a further series of post-graduate lectures, open to members of the profession, to be given, by the kind permission of the Royal Society of Medicine, in the West Lecture Hall, 1, Wimpole-street, during February and March. The opening lecture on Wednesday, Feb. 7th, at 8.30 P.M., will be given by Mr. J. P. Lockhart-Mummery on Diverticulitis, and others will follow by Dr. G. A. Sutherland, Mr. Cecil Rowntree, Dr. George Riddoch, and Mr. A. J. Walton. Copies of the complete programme will be forwarded on application to the secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

A course of six practical lecture-demonstrations on Certain Diseases of Children will be held during February at the Children's Clinic, Western General Dispensary, Cosway-street, N.W. 1, on Tuesdays and Fridays at 5 P.M. The first will be given on Tuesday, Feb. 13th, by Prof. Sir William Bayliss on The Physiology of Digestion; lectures by Dr. Bernard Myers will follow, the concluding lecture on Friday, March 2nd, being devoted to The Nervous Child, as Seen in General Practice. The fee for the course is one guinea, and copies of the syllabus can be obtained from the secretary to the Fellowship of Medicine, 1, Wimpole-street, W. 1.

VOCATIONAL TRAINING OF TUBERCULOUS EX-SERVICE MEN.—The Ministry of Health has issued a circular (No. 371, England, dated Jan. 20th) to county and county borough councils, tuberculosis joint committees, and metropolitan borough councils, referring to circular 307, dated April 29th, 1922, relative to the special arrangements for the vocational training of ex-Service men suffering from tuberculosis. It has been decided to utilise, under those arrangements, and in addition to the accommodation described in that circular, 100 places provided at the Preston Hall Sanatorium and Training Colony, Aylesford, Kent, by the Industrial Settlements (Incorporated) for Disabled Soldiers and Sailors. The courses of training at Preston Hall will comprise: (1) market gardening, poultry and pig-keeping, &c. (70 places); (2) rural carpentry (30 places). The general provisions of circular 307 will apply in regard to cases proceeding to Preston Hall under the vocational training scheme; payment for such cases will be made by the Minister of Health direct to the authorities of the institution. Cases will be selected by the Ministry of Pensions from the approved applicants under the scheme; tuberculosis officers will be informed by the Deputy Commissioners of Medical Services (Tuberculosis) of the cases selected, and asked to arrange for their admission. Many of these cases will already have been approved for a course of training at another institution, and their names placed on the latter's waiting list. A tuberculosis officer should take steps to secure admission of the case to Preston Hall without delay, unless arrangements have actually been made to send the case on a specified date to the institution for which he was originally approved. In the latter event the tuberculosis officer should inform the D.C.M.S. (Tuberculosis) accordingly. In some cases tuberculosis officers will not be in possession of the medical reports on Form M.P.M.S.D. 119, but this should not be allowed to delay the admission of cases to Preston Hall under this scheme. In these cases the reports should be recovered from the medical superintendents of the institutions previously chosen and then forwarded to the medical superintendent of Preston Hall, who should be informed that the case has been approved by the D.C.M.S. (Tuberculosis) for vocational training at that institution. The Minister relies on the coöperation of tuberculosis officers in dealing promptly with cases selected for vocational training at Preston Hall. These men are entitled to remain in the institution until completion of a special course of vocational training, the duration of which is not to exceed 12 months. Such cases are not to be confused with cases sent for treatment combined with training (in accordance with paragraph 12 of Memorandum 30/T); the latter are sent primarily for treatment, and the length of their stay is subject to review by the Ministry of Pensions, as in the case of other ex-Service men receiving treatment in residential institutions.

UNIVERSITY OF MANCHESTER.—Miss Muriel M. Nutt, Nat. Sci. Trip. (Cambridge), has been appointed Demonstrator in Bacteriology.

GUILD OF HEALTH.—A public lecture on Psycho-therapy and Religion will be delivered by Rev. L. W. Grensted at the Central Hall, Westminster, London, S.W., on Jan. 31st at 8.15 P.M., Dr. William Brown presiding.

THE fifth annual reunion dinner for overseas medical officers, West Lancashire area, will be held on Thursday, Feb. 8th, at 7.30 P.M., at the Exchange Station Hotel, Liverpool. Tickets may be obtained from the hon. secretary, Dr. J. W. Burns, 49, Rodney-street, Liverpool.

SCOTTISH POOR-LAW MEDICAL OFFICERS' ASSOCIATION.—In their report for 1922 the Committee of the Association state that vacant appointments have again been under the average during the year, and were chiefly owing to deaths and removals from the districts. Correspondence has taken place with members in regard to medical officers supplying drugs out of their salaries. Advice was given that this was illegal, except in cases where it was specifically mentioned in the agreement that drugs were to be supplied out of the salary; further, that the Scottish Board of Health did not approve of drugs being included in the salary. Also, in regard to fees for statutory visits to boarded-out mental defectives, advice was given that a fee was chargeable in each case where the mental defective belonged to an outside parish, and that a fee was also chargeable in cases belonging to their own parish, except where the agreement said that such visits were to be included in the salary. The Scottish Committee of the British Medical Association interviewed the Scottish Board of Health in regard to tenure of office, but failed to move that board. It now remains to approach the B.M.A. Council in London, and endeavour to get them to approach Parliament by a Private Bill. The Committee have tried in past years to get the existing anomalous position rectified, but so far without result; they point out that it is manifestly unfair that English medical officers should have an appeal against injustice, and that medical officers in the crofting counties of Scotland should have practically the same protection, while medical officers in the rest of Scotland hold their appointments at the absolute caprice of parish councils. Parliament has now passed a Bill granting superannuation to all local Government officials, medical officers included. The Act is contributory in nature, but voluntary on the part of parish councils.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—A meeting of the Executive Council will be held at the offices of the Federation, 12, Stratford-place, London, W. 1, on Tuesday next, Jan. 30th, at 5 P.M., when the report of the Finance Committee will be submitted and indications of further activities will be mentioned. The Federation proposes to make certain representations upon the questions of exemption from legacy and succession duty, and of remission of local taxation, in respect of voluntary hospitals.

ROYAL INSTITUTION OF GREAT BRITAIN.—The Friday evening discourse on Feb. 2nd will be delivered at 9 P.M. by Mr. Charles F. Cross, F.R.S. The subject is Fact and Phantasy in Industrial Science. On Feb. 1st, at 3 P.M., Dr. I. M. Heilbron will give his first lecture on the Photo-synthesis of Plant Products.

THE IVORY CROSS: FIRST SAINT APOLLONIA DINNER.—The Ivory Cross is to hold a banquet on Friday evening, Feb. 9th, at the Hotel Victoria, Northumberland-avenue, London, W.C. 2, to commemorate Saint Apollonia, who was recently installed as the patron-saint of dentistry. The date was selected by the committee, of which Sir Acton Blake is chairman, because Feb. 9th is the feast-day of this saint. Tickets (price £1 1s.) can be had from any member of the Dental Committee, or at the offices of the Ivory Cross, 10, Henrietta-street, London, W. 1.

THE LATE DR. JOSHUA J. COX.—Dr. COX, who died suddenly on Jan. 17th, was born in Ireland in 1854 and was educated at the University of Edinburgh, where he obtained the degree of M.B. in 1875, and that of M.D. in 1881, becoming F.R.C.S. Edin. in 1885. He settled in Eccles in 1880, where he lived for several years and secured a large practice. He was for many years a consulting physician to the Northern Hospital, the Victoria Dental Hospital, Manchester, and other institutions in and around Manchester. Some years ago he went to live in Buxton, but kept up his consultation practice in Manchester. At the outbreak of the war Dr. Cox was appointed president of the Medical Recruiting Board in Manchester, and later a Commissioner of Medical Services for the North-Western Division; for these and other services he was awarded the military O.B.E. Dr. Cox always took keen interest in the diseases of children, and during his residence in Buxton rendered valuable service to the Derbyshire and Buxton Cottage Hospitals.

IRISH POOR-LAW LEGISLATION.—Last week the Minister for Local Government introduced in Dail Earann the Local Government (Temporary Provisions) Bill. The text of the Bill is not yet published, but the Minister stated that its object was to legalise the various reforms in Local Government that had been carried out in the past few years. Prior to the establishment of the Free State, under the advice of the then Local Government Department of Dail Earann, a number of reforms were carried out in several counties. Poor-law unions and workhouses and district hospitals were abolished and health administration was organised on a county basis. Until the Bill now before Parliament is passed, these changes have no legal authority. In introducing the Bill the Minister renewed his promise that permanent legislation would be subsequently introduced to deal with Local Government affairs. It is recognised that the reforms so far made are not perfect in themselves and are by no means adequate for dealing with the whole situation.

THE LATE DR. A. P. SHERWOOD.—The death occurred at Eastbourne on Jan. 17th, at the age of 71, of Dr. Arthur Paul Sherwood, who had been in practice at Eastbourne for 44 years. He had only retired from practice two days before his death, and was making arrangements to take up his residence in the country. Dr. Sherwood qualified M.R.C.S., L.R.C.P. from St. George's Hospital in 1873, and held the appointments of house physician at his hospital and house surgeon at the Bedford General Infirmary, and became M.D. Durham in 1891. He was a founder and one of the first medical officers of Princess Alice Memorial Hospital at Eastbourne, and for 25 years was treasurer and secretary of the local Provident Medical Association. During the war he did valuable work as medical officer of Sussex 15 V.A.D., and at the local Red Cross hospitals. He was a prominent Freemason and held high provincial honours.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, Jan. 31st.

SOCIAL EVENING: at 8.30 P.M.
Fellows, Members of Sections, Associates and their friends will be received by the President, Sir William Hale-White, and Lady Hale-White, at 8.30 P.M.
Prof. William Wright will deliver a short Address at 9 P.M. on "Leonardo da Vinci."
The Library will be open, and various objects of interest will be exhibited. Music, light refreshments, and smoking.

Thursday, Feb. 1st.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.
Specimens:
Dr. Fairbairn: (*a*) A Necrotic Fibro-adenoma in a patient of 74, simulating Cancer of the Body. (*b*) Cyst of the Uterine Cornu.
Mr. Beckwith Whitehouse: Slides from a case of Multiple Cysts of the Vagina of Lymphatic Origin, simulating Adenomatosis Vaginæ.
Short Communications:
Dr. W. R. White-Cooper and Mr. H. K. Griffith: (1) A case of Inversion of the Uterus occurring in the Third Week of the Puerperium. (2) A case of Obstructed Labour due to Contraction Ring.
Mr. Beckwith Whitehouse and Dr. Henry Featherstone: A Note on the Use of Spinal Anæsthesia with Tropococaine in Cases of Cæsarean Section.
Paper:
Dr. S. Cameron: Cæsarean Section.

Friday, Feb. 2nd.

LARYNGOLOGY: at 4.45 P.M. (Cases at 4 P.M.)
Cases and Specimens will be shown by—
Mr. A. J. Wright, Sir StClair Thomson, Mr. Andrew Wylie, Dr. Nicoll Rankin, Mr. Archer Ryland, Mr. Vlasto, Sir James Dundas-Grant, and Dr. Douglas Guthrie.
Lantern Demonstration:
Dr. Irwin Moore: Operative Procedures in the Treatment of Bilateral Paralysis of the Abductor Muscles of the Larynx, with special reference to a new method by means of which, it is suggested, the air-way may be reopened and the patient de-cannulated.

ANÆSTHETICS: at 8.30 P.M.
Paper:
Dr. J. Strickland Goodall: Some Cardiovascular Conditions in Relation to Anæsthesia. Sir Bernard Spilsbury, Dr. Goodman Levy, and others have promised to take part in the subsequent discussion.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Presidential Address:
Dr. R. J. Reece: Progress and Problems in Epidemiology.
It is proposed that Members of the Section should dine together before the meeting at 6.30 P.M. at Pagani's Restaurant, 42, Great Portland-street, W. Members intending to dine are requested to give notice as soon as possible to Dr. Greenwood, National Institute of Medical Research, N.W. 3.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Jan. 29th.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards. 4 P.M., Mr. Bishop Harman: Senile Failures of Vision.
TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2.30 P.M., Mr. Donald Armour: Surgical Wards. 4 P.M., Dr. Archer: Demonstration of Renal Function Tests.
THURSDAY, Feb. 1st.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—12 noon, Dr. Flett: Radiology. 3 P.M., Mr. Sinclair: Surgical Cases. 4 P.M., Dr. Burrell: Demonstration of Artificial Pneumothorax.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M.: In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, Feb. 1st.—8 P.M., Dr. F. G. Crookshank: Some Types of Defective Children (Lantern Lecture) followed by Discussion to be opened by Dr. Sundell.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: JAN.–MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, Jan. 29th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Some Aspects of Nervous Diseases: Dr. James Taylor.

TUESDAY, Jan. 30th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Myopathy: Dr. Adie.

THURSDAY, Feb. 1st.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Visceral Carcinoma and Secondary Involvement of the Nervous System: Dr. Walshe.

FRIDAY, Feb. 2nd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Myelitis: Dr. Saunders.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, Jan. 29th.—12 noon, Cerebro-Spinal Fluid: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12s., but these Lectures may be taken separately for a fee of £4 4s. Course without Anatomy and Physiology Lectures will be £10 10s. Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-st., W.C.

THURSDAY, Feb. 1st.—4 P.M., Dr. Poynton: Progressive and Malignant Endocarditis.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.

THURSDAY, Feb. 1st.—5 P.M., Dr. W. Knowsley Sibley: Alopecia and its Treatment.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Jan. 30th.—4.15 P.M., Mr. P. R. Wrigley: Carcinoma of the Colon.

FRIDAY.—4.15 P.M., Mr. J. Morley: Applied Anatomy of the Gastro-Intestinal Tract.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURES (at Whitworth-street West Branch).

FRIDAY, Feb. 2nd.—4.30 P.M., Dr. Fletcher Shaw: Hæmorrhage Occurring Apart from Pregnancy.

SALFORD ROYAL HOSPITAL, MANCHESTER.

THURSDAY, Feb. 1st.—Dr. W. R. Addis: The Diagnosis of Malignant Disease of the Uterus.

MANCHESTER FRENCH HOSPITAL, 24, Acomb-street, Whitworth Park.

THURSDAY, Feb. 1st.—4.30 P.M., Mr. Howard Buck: The Treatment of Rupture.

Appointments.

CRAIG, GEORGINA S., M.B., Ch.B., D.P.H. St. And., has been appointed Assistant Medical Officer for Cheshire.

EVANS, EVAN, M.B., B.S. Lond., Medical Officer of Health for Lampeter.

HELM, W. A., M.B., Ch.B. Manch., Assistant Medical Officer for East Lancashire Tuberculosis Colony.

NUTT, MURIEL M., Demonstrator in Bacteriology at Manchester University.

SMITH, ALICE B., M.B., Ch.B. Edin., L.M., D.P.H. Dub., Third Assistant Resident Medical Officer to the Salford Union Infirmary.

THYNNE, MILDRED A., M.B. Lond., L.R.C.P. Lond., M.R.C.S., Assistant Medical Officer for Maternity and Child Welfare to the Bermondsey Borough Council.

Certifying Surgeons under the Factory and Workshop Acts: BURROWES, H. A., M.D. Lond. (Looe); CRAIG, A. C. C., M.B., Ch.B. Edin. (Kirkcudbright).

Vacancies.

For further information refer to the advertisement columns.

Aylesbury, Royal Bucks Hospital.—Res. M.O. £150.

Battersea Borough Council.—Asst. M.O. £550.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.

Bristol General Hospital.—Hon. Phys. Accoucheur. Also Asst. Phys. Accoucheur.

Bristol Royal Infirmary.—H.P.s and H.S.s, &c. Each £120. Also Hon. Ophth. Reg.

Canterbury, Kent and Canterbury Hospital.—Res. M.O. £175.

City of London Hospital for Diseases of Chest, Victoria Park, E.—Asst. M.O. £100. Also Phys. to Out-patients.

City of London Mental Hospital, near Dartford, Kent.—Second Asst. M.O. £350.

Croydon County Borough.—M.O.H. £1300.

Croydon General Hospital.—Hon. M.O. for X Ray Dept.

Durham County Hospital.—H.S. £200.

India, Countess of Dufferin's Fund, Women's Medical Service.—Two Med. Women. Rs.450 p.m.

Liverpool Royal Children's Hospital.—Two Res. H.P.'s and Two Res. H.S.'s. Each £90.

Liverpool, Royal Southern Hospital.—Res. Cas. O. £150. Also Two H.P.'s and Three H.S.'s. Each £100.

London Lock Hospital, Dean-street, and Harrow-road.—Surg. Reg.

Manchester, Monsall Fever Hospital.—Med. Supt. £750.

Middlesex Hospital Medical School—Eight Registrars.

Napsbury Mental Hospital.—Jun. Asst. M.O. £546 14s.

Northampton County Borough Education Committee.—Asst. Sch. M.O. and Asst. M.O.H. £600.

Norwich, Norfolk and Norwich Hospital.—H.S. £150.

Preston and County of Lancaster Queen Victoria Royal Infirmary.—Res. Surg. O. and H.S. £225 and £200 respectively.

Prince of Wales's General Hospital, Tottenham, N.—Hon. Asst. Gynæcologist.

Rochdale Infirmary and Dispensary.—Jun. H.S. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal Dental Hospital of London, Leicester-square, W.C.—Two House Anæsthetists. 10s. 6d. per attendance.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—Hon. Asst. S. Also Clin. Assts.

Royal London Ophthalmic Hospital, City-road, E.C.—Refraction Asst. £100.

Salford Royal Hospital.—Anæsthetist. £1 1s. per session. Also Hon. Asst. Radiographer.

Sheffield University.—Asst. Bacteriologist and Demonstrator in Pathology. Each £300.

South London Hospital for Women, Clapham Common, S.W.—Sen. H.S. £100. Also Second H.S. £50.

Stoke-on-Trent, North Staffordshire Infirmary.—H.S. £200.

Surrey Dispensary, Great Dover-street, Southwark, S.E.—S. 50 guineas.

University College Hospital, Gower-street, W.C.—Asst. in Child Welfare. £50.

University of London.—External Examiners, &c.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Hon. P. or S. for Dis. of Skin.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. S.

Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £300.

The Chief Inspector of Factories, Home Office, London, S.W., announces the following vacant appointments: Canterbury (Kent), New Mills (Derby), Stourbridge (Worcester), Gravesend (Kent), Bucksburn (Aberdeen), Thirsk (York).

Births, Marriages, and Deaths.

BIRTHS.

BISSET-SMITH.—On Jan. 20th, 1923, at 34, Chester-square, Ashton-under-Lyne, the wife of Dr. R. Bisset-Smith, of a son.

HEPPER.—On Jan. 16th, at Frimley, Surrey, the wife of Dr. John E. Hepper, of a son.

MATHESON.—On Jan. 18th, at Heaton-road, Newcastle-on-Tyne, the wife of Dr. James Matheson, of a daughter.

MERRICK.—On Jan. 16th, at Edith-road, West Kensington, London, W., the wife of R. Warren Merrick, M.D., of a son.

MARRIAGES.

MARTIN—BLANDY.—At St. Pancras Church, London, James Purdon Martin, M.A., M.D., M.R.C.P., to Marjorie Ada Blandy, M.B., M.R.C.P., younger daughter of the late Richard Blandy, Madeira and Jersey.

DEATHS.

CHANCE.—On Jan. 20th, at Clairview-road, Streatham, suddenly after long illness, Robert F. Chance, M.R.C.S., L.R.C.P., aged 54.

SHERWOOD.—Very suddenly, Arthur Paul Sherwood, M.D., of Eastbourne, in his seventy-second year.

WHITELEGGE.—On Jan. 19th, at his residence, Riverside, Saltford, Som., Surgeon-Captain William Arthur Whitelegge, R.A., M.D., R.N. Retd., aged 61.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

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	Six Months	1	5	0
	Three Months	0	12	6

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Official and General Announcements .. } and under 6s. 0d.
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Every additional line, 1s. 6d.
Quarter Page, £3. Half a Page, £6. Entire Page, £12.
Special Terms for Position Pages.

Notes, Comments, and Abstracts.

ANATOMICAL TERMINOLOGY.

BRITISH OR CONTINENTAL?

BY A LONDON TEACHER.

THE language of anatomy is a matter of wide interest to the medical profession as well as to those who spend their lives in anatomical work. The mildest anatomist shows a tendency to get savage when the matter is raised, but the majority of medical men do not seem to appreciate to what an extent it may affect their own work.

"The Language of Anatomy."

Some little time ago there appeared in the form of S.P.E. Tract No. IX,[1] a treatise on the language of anatomy as viewed by Dr. Cuthbert Morton, edited with an introduction by Dr. Robert Bridges. Dr. Morton's efforts to remedy what he considers to be the defects of English anatomical terminology are well known to many; we may or may not find it easy to see how the path of the anatomical student could be made more rosy by the adoption of Dr. Morton's anatomical language—or, indeed, of any system other than the particular one he may be using—but this does not lessen the interest felt in perusing this little tract, nor keep one from agreement with much of what is said in it. Perhaps those who are not actually concerned in the detailed discussions on terminologies are able to take a detached and wide view of the whole question of change, and it is interesting to note that "the import of this disquisition is to condemn the action of those who are moving to introduce a formal Latin international terminology into the British schools of anatomy, on the false notion that it will be of service to international science."

This condemnation appears to be justifiable. Both popular and scientific languages must be subject to the process of evolution, if they are alive, and so long as they are alive, and no language reaches its final form till it is dead. Who can tell what the subtle forces are which slowly change a common tongue in one direction in one country, and in another under another sun? But whatever these may be there is little doubt that if, by some miracle, a common tongue were established to-morrow, the inevitable evolutionary changes would begin to alter it in each country as it was learnt, and in a few years or a few centuries the number of distinct languages would tally with that of the countries. The same applies to anatomical terminology, and each country must and will have its own ideas of what terms it likes to use in this matter, as in its daily speech. The S.P.E. tract goes perhaps even further than this, for it contends that "all scientific nomenclature must have its basis in every national language, and that whatever classical or foreign terms are introduced should be as far as possible adapted to the national speech."

Evolution in Nomenclature.

There are many anatomical terms that call for revision, as every anatomist admits, because they have become inappropriate. This is one of the things of which evolution will take account. Its action is slow but none the less sure, and many of us, looking back to our student days, can see that even in that relatively short time a distinct change is recognisable in nomenclature which has been slowly and quietly progressing in the interval, not as the result of any violent upheaval from without, but from inevitable internal evolution. Other terms are sometimes said to be confusing. No doubt a theoretical case of this sort might be made out about certain descriptive terms, but we doubt whether in practice confusion ever arises in the minds of an audience from the use of these terms by a competent teacher. No language can be made fool-proof, and none can be rendered malice-proof. Moreover, it must be remembered in this connexion that the general education of the audience has much to do with it: the writer who speaks of "corpora quadrigemina bodies" has got somewhat mixed in his terms, but the fault lies in the deficiencies of his education and cannot properly be laid at the door of anatomical nomenclature. The general opinion among teachers of anatomy seems to be that students have little difficulty in acquiring the terms in use, and the difficulty they may find in grasping the meaning of these terms is largely if not altogether due to lack of general education.

Proper names are in most cases ornaments without which anatomy can progress very well, but here and there they are so closely interwoven with a part, are in fact such popular favourites, that they will probably withstand all assaults on their positions. Speaking of some of these, the S.P.E. tract says: ". . . . Such terms have some of the best qualities of good nomenclature; they are traditional, definite, picturesque, and easily remembered; it would therefore be foolish to oust them without very good reason, but it is foolish to keep them when they are useless. In medicine a proper name is often convenient; although Bright's disease might be called "nephritis' without loss, it would be difficult to find a short descriptive name for Addison's disease. . . . ." We get a notion from this about the possible value of a proper name, but no light is thrown on the hidden factors making for popularity or distaste for names; we would object strongly to the loss of Poupart's ligament or Hunter's canal, but we could hear without a sigh of the removal of the muscle of Zaglas or the veins of Zuckerkandl from the list of anatomical structures.

Latin as a Medium of Intercourse.

As for the use of Latin, we have to distinguish between Latin words which have become English, perhaps without change, and those which are used definitely as a different language. Thus the Latin adjective *biceps* has become a good English noun in practice, whereas to call the muscle *Musculus biceps* would be to describe it to an English audience in a foreign tongue. This would be a retrograde step, going backwards some few centuries, and it is hard to see any justification for it, or any benefit which might with reason be supposed to accrue from it. The critical remark in the tract, on a supposed advantage often urged on its behalf, puts the matter well: ". . . . It is a strange mistake to suppose, as some argue, that by use of the Latin forms of the Latin words of the international we shall in any way facilitate 'international intercourse.' There is nothing to be gained by it, for unless we shall all talk Latin again there can be no 'intercourse' without the common knowledge of a modern language; a sprinkling of intelligible scientific terms in a discourse the language of which is unintelligible can serve no purpose whatever; and if one knows enough of the language to understand the discourse, then the naturalised scientific terms will be as easy to understand as their full Latin equivalents. . . ." As a matter of fact the professional anatomist has no difficulty in understanding what his foreign colleagues mean when they use their national nomenclature, and if he, the one mainly and daily concerned, is thus found to have no need for an international nomenclature, the ordinary student might be said to have no use for it.

Speaking of the Austro-German terminology the tract says: "Thus Professor Barker, of Washington, states that 'The terms are all in correct Latin,' which can easily be disproved, and also that each 'name has a definite and easily ascertainable meaning,' which is truly remarkable if the terms are 'merely memory signs and need lay no claim to description or to speculative interpretation. . . .' This terminology suffers from an almost mediæval servitude to latinity." It would seem that there is little need for internationalism, and that the British terminology may in general be safely left to evolve along its own lines. The large amount of anatomical literature circulating in the world is enough to ensure that the various lines of evolution do not lose touch with one another, and each will preserve what it finds good. But this cannot be permanently forced by artificial methods, and it is not natural to expect any nation to yield up the evolution of its terminology to another nation or nations.

Yet British anatomists may help the British evolution by small excisions and alterations where the need is apparent; but the help, if it is to be helpful, will have to be done with loving care and within very narrow limitations.

[1] Society for Pure English Tract. Clarendon Press.

WHAT GERMANY'S RISING PRICES REALLY MEAN.

The following statement, written by the statistical authority in a mid-German community, has been sent to us by the Friends' Council for International Service.

BY the "increased cost of living" in Germany many people merely take to mean the raising of prices. In reality rising prices do not of necessity mean this; it is the want of relationship between the general level of prices and the national income of the population, which of course takes different aspects in individual strata, circles, and professions within the population. While I do not attach much importance to so-called index figures, &c., it must be recognised that they express the general trend of events, and I may mention here that the index figure of the Reich for the cost of living, regarding food, clothing, lighting, heating, and housing, developed from about 600 at the beginning of 1920 to about three times that amount (1800) at the beginning of 1922, and has now reached over 40,000—about 70 times as much as the figure of the beginning of 1920.

I have myself calculated a new index figure, which I call a "calories index figure" and which expresses the price per 1000 calories from the 26 foodstuffs on which the Reich calculation is based. This showed that 1000 food units from

the foodstuffs most commonly in use cost about 40 pfennige before the war. Against this 1000 calories cost—

	Pfennige.		Pfennige.
1920 in Feb. ..	.. 384	1921 in Dec. ..	.. 832
,, ,, July ..	.. 521	1922 ,, July ..	.. 2,810
,, ,, Dec. ..	.. 447	,, ,, Sept. ..	.. 5,209
1921 ,, July ..	.. 597	,, ,, Nov. ..	.. 17,518

Thus what could be bought in the way of foodstuffs in the last years before the war at 40 pfennige, now costs 175 marks.

Looking at the meaning of the "increased cost of living" in the light of the foregoing, it will be seen that with this increase the purchasing power of the consumer rapidly decreases, while salaries and wages cannot by any means be raised correspondingly, otherwise there would be no "increased cost of living." The high figures for the salaries of officials, which are so much commented upon abroad, are a great delusion. They do not come up to the very modest pre-war salaries of German officials by a long way.

In the same way as the old people gradually literally starve to death, if they cannot be assisted by relations or friends, nowadays even children in the first years of their life, who are more easily nourished, are beginning to suffer from the increased cost of living, in view of the fact that a quart of milk which cost about 20 pfennige before the war, will now soon cost little less than 200 marks in many of the large towns. With the general progress of the increased cost a certain levelling of salaries and wages inevitably results; the combines of different kinds of industries and manufactories, as well as of the consuming public, gradually do away with the law of supply and demand, and from this results a gradual extermination of the so-called intelligentsia.

In Russia large sections of the intelligentsia are reported to have been forcibly destroyed; with us conditions only differ as to outward form. By intelligentsia I by no means only refer to people with a university education, but to all those who are above the average prevailing in their respective trade or profession. In the first line of these I would put the intelligentsia of labour. Added to this, the activities of scientific institutions are being increasingly hampered. Research will gradually cease, if it is considered that a sheet of ordinary writing paper can hardly be had for less than 10 marks, and that scientific treatises, evolved with the utmost difficulties, cannot be published in scientific circles, much less to the public at large, on account of the cost of printing.

The increased cost and decline in the value of our money abroad is followed by a reduction in the purchase of raw materials. This reduction in imports combined with the high cost of fuel, and its scarcity on account of reparations in kind, must at no distant date lead to a collapse. To mention some trifling examples: The stoneware industry suffers especially from the high price of fuel. A common egg-cup can still be bought in a shop for about 75 marks; new stock are charged at 475 marks a piece, and could not be sold at less than 600 marks retail. A very plain bedroom suite which could be bought last year for 6000 marks costs to-day no less than 260,000 marks in consequence of increased charges for wood, transport, and labour. The ever-rising prices of skins, which are influenced by the international skin and leather market, have so damaged the shoe industry that many factories are working short time—i.e., only a few days per week. More especially high prices are prejudicing the textile market. Here raw materials are already so costly that manufacturers are scarcely able to buy them, and the finished articles may assume prices which the mass of the population is quite unable to afford. Thus it will not be a matter for surprise that school doctors in the large towns report that they frequently examine children who have no underclothes whatever.

From the educational point of view, the prices of books are well known to you. The simplest books hardly ever cost less than 1000 marks, and as to music, simple piano scores, which could in pre-war times be bought for a few marks in popular editions, now fetch 50,000 marks and more. The prices for school copy-books for children are nowadays over 100 marks, against 5, 10, or 15 pfennige pre-war, so that, I am told, in the lower forms of some of the secondary schools the slate has once more come into use. But even a school slate is not to be had for less than several hundred marks and will probably soon cost 1000 marks.

A HOME FOR DRUG TREATMENT IN THE WEST OF ENGLAND.

Bay Mount, Paignton, has recently been opened as a home for the treatment of alcoholism, drug habit, and neurasthenia. The treatment consists in hypodermic injections and a combination of bitter tonics taken by the mouth. The coöperation of a psychologist has been secured for the employment of suggestion in suitable cases. Every case is treated with a view to a permanent cure. Treatment in alcoholic cases takes five or six weeks, in drug cases from six to eight weeks. The drugs are withdrawn gradually and attention is paid to painless cure. Neurasthenic cases of mild type in which insomnia, depression, irritability, and tremors are the main symptoms, require from five to ten weeks' treatment. Both male and female patients are taken and certain male cases can be treated as out-patients. Patients live an ordinary life, and are not under compulsion or restraint. Craving for alcohol is generally lost in five or six days, after which the patient is put on parole, and his promise accepted not to have any alcohol outside the premises. Indoor and outdoor games of all kinds are provided. Medical baths are obtainable at Torquay Spa. The home stands in its own grounds of three and a half acres of secluded gardens, containing a tennis court, croquet lawn, and putting green. The gardens supply the house with all its fruit and vegetables. Paignton is 20 minutes' tram-ride from Torquay, and can be reached by train from London in less than four hours, without a change. The climate is mild, and is remarkable for the amount of winter sunshine. Dr. D. E. Stanford Park is resident medical superintendent.

DEATHS UNDER CHLOROFORM IN CHILDBIRTH.

Two recent inquests emphasise the fact that parturition does not connote the immunity against danger from chloroform administration with which it has sometimes been credited.

The Paddington deputy coroner inquired on Dec. 27th last into the death of a woman of 40 to whom chloroform was being given for an obstetric operation. Death occurred suddenly 20 minutes after induction. Dr. C. T. Parsons, who found some fatty degeneration of the heart, expressed the opinion that more chloroform had been given than the heart could manage.

The City coroner held an inquest on Jan. 16th on the body of a woman, aged 28, who died in hospital whilst under the influence of chloroform given for the removal of a retained placenta. She had been attended at home by two certificated midwives, a nurse, and two doctors, and she reached the hospital in a state of collapse from post-partum hæmorrhage. Chloroform was administered and death took place from asphyxia due to aspiration of fluid from the stomach accelerated by loss of blood whilst under the influence of chloroform. The administrator stated that chloroform had been chosen as an anæsthetic to save time.

At the second inquest, the coroner, Dr. F. J. Waldo, referred to the recommendations made unanimously by the Home Office Committee of 1910 and asked the anæsthetist whether they had been carried out. This Committee, it may be recalled, was appointed to inquire into the question of deaths resulting from the administration of anæsthetics, its members being M. D. Chalmers (chairman), Malcolm Morris, H. A. Shephard, T. A. Bransdon, and W. H. Willcox. The recommendations, nine in number, were put in succession to the witness, who replied as follows to the more important:—

Recommendation 1.—Every death under an anæsthetic should be reported to the corner, who, after inquiry, should determine whether it is desirable to hold an inquest or not. *Carried out?*—No.

Recommendation 3.—No general respirable anæsthetic should be administered by any person who is not a registered medical or dental practitioner. *Carried out?*—No, anyone may still administer chloroform or any other anæsthetic.

Recommendation 8.—In the case of any death under an anæsthetic in a hospital or other similar public institution, there should be a scientific investigation into the actual cause of death conducted by the authorities of the institution. *Carried out?*—No, this has not so far been carried out. The only investigation still made is by a jury before a coroner or by a coroner sitting alone, who sometimes orders a post-mortem examination.

Recommendation 9.—A small standing scientific Committee on Anæsthetics should be instituted under the authority of the Home Office. *Carried out?*—No, not yet.

In summing up, Dr. Waldo called the jury's attention to the meagre results so far following on the Home Office recommendation. No. 3, the most important, had not been carried out. No. 9, the next most important, was eminently fitted for advancing knowledge. The functions of such a committee would be to collect and digest information from all sources, to report on any discovery of new anæsthetics or methods of administration, and to direct chemical, toxicological, or physiological researches to test new discoveries or elucidate doubtful points. Its appointment was a matter which deeply concerned the public at large. Happily, he went on to say, deaths under anæsthetics had been on the decrease from year to year so far as it was possible to judge from the present imperfect system of records. During the preceding calendar year he had only investigated five deaths, the lowest number he could remember. In nearly all the anæsthetic deaths investigated by him during the last 22½ years juries had returned verdicts of death accelerated by chloroform or by a mixture containing chloroform. Deaths were rarely reported to him where ether or gas and oxygen had been given, and

he had only inquired into two or three deaths under intraspinal anæsthesia. The status of the anæsthetist nowadays was, Dr. Waldo concluded, on a much higher plane than was formerly the case.

The jury, in returning a verdict of "Death from misadventure," expressed their deep sense of the importance of the issues raised and of the need for further preventive measures.

A WELL-DOCUMENTED METHUSELAH.

To the Editor of THE LANCET.

SIR,—The death of William Kennedy of Holden has been registered with this department. His age is given as 125 years, the primary cause of death being "senility," and the contributory, "exhaustion." On investigating the dates, I got the following information from his son: "He was baptized on Sept. 25th, 1802, near Enniskillen, Ireland, by the Rev. John Richardson, Vicar, parish church of Ireland, and is the son of Thomas and Margaret Kennedy of Glenvannon. I personally copied it from the original in 1898. He had seven brothers and four sisters, and one of the latter was alive two years ago, and was senior to deceased. He shaved without glasses two weeks ago, and until lately could read without glasses. He recited long passages of Scripture within four days of his death, and passed away almost imperceptibly."

Trusting the foregoing information may be of interest to you, I am, Sir, yours faithfully,

DONALD MACKIE,
Deputy Registrar-General.

Bureau of Vital Statistics, Edmonton, Alta.
Jan. 5th, 1923.

IMPERIAL CADET ORGANISATION AND PREVENTIVE MEDICINE.

To the Editor of THE LANCET.

SIR,—In the daily round and common task, it falls to my lot to observe scholars and adolescents from the anthropometric viewpoint. One fact stands out clearly—the evil influence exerted by the Great War on the stamina of the 1905–8 age-groups, 1,600,000 lads. Rickets defect prevails in many children of the later groups. Overcrowding, faulty nutrition, absence of parental control, and State neglect have played their parts in this deplorable business.

Surely the time has arrived for the introduction of an universal cadet system, so that these 1905–8 age-groups may benefit by discipline, games, and ten days' annual holiday camp. In the mother country, Lord Haig's training area organisation, at present in skeleton form, will serve us well, if made incarnate by these lads. The Australasian cadet costume, modified to suit our climate, affords an object lesson in cheap and hygienic clothing. For instructional staff, there already exists ample talent in this country.

Preventive medicine will never come into its own until we attain to a carefully planned routine for the guidance and kindly control of all our youths. The scrapping of the continuation schools renders an all-embracing cadet system imperative and urgent. No new ministries are needed—the machinery is to hand. It rests with the members of our profession to insist upon its being set working, for we possess the confidence and affection of the nation in our exacting and dangerous calling, and our warnings will be heeded.—I am, Sir, yours faithfully,

R. J. E. HANSON,
Surgeon-Captain, R.N.V.R.; Hon. Secretary of the Imperial Cadet Association.

71, Pall Mall, London, S.W. 1, Jan. 22nd, 1923.

COLONIAL HEALTH REPORTS.

Trinidad and Tobago.—The estimated population of the two islands at Dec. 31st, 1921, was 368,943. The white population is chiefly composed of English, French, Spanish, and Portuguese. The large majority of the inhabitants are natives of the West Indies of African descent, the balance being made up of East Indians, estimated at 128,533, and a small number of Chinese. The birth-rate in 1921 was 31·64 and the death-rate 24·02 per 1000. The number of deaths of children under 1 year of age was 1625. The death-rates from the principal diseases were: diarrhœa and enteritis, 1·61; malaria, 2·42; tuberculosis, 1·34; dysentery, 0·60; enteric fever, 0·65; and ankylostomiasis, 0·81 per 1000. Influenza was prevalent generally and was of mild type. There was no epidemic prevalence of any other disease. Venereal clinics on modern lines have been established in the out-patients' departments of the Colonial hospitals at Port of Spain and San Fernando. On the recommendation of the Central Board of Health drainage schemes for the control of malaria were begun in three country districts, and it is proposed to continue the development of these major anti-malarial measures. The intensive treatment of hookworm disease was continued during the year by the Rockefeller International Board of Health. The Central Board of Health coöperated by enforcing the establishment of latrines in advance of the treatment in the areas about to be operated in. The climate of Trinidad is tropical and may be divided into two distinct seasons: a dry one from January to the middle of May, with an average rainfall of about three inches per month, and a wet one from June to December, with an average of eight inches per month. The coolest months are December to April. The average temperature during the day is 84° and during the night 74°. The climate is healthy and by no means hurtful to Europeans, provided reasonable precautions are taken. Hurricanes are unknown.

Bechuanaland Protectorate, South Africa.—A Census taken in May, 1921, showed that the population then consisted of 150,185 natives, 1743 Europeans, and 1055 Asiatics and coloured persons. The year ended March 31st, 1922, was a mild one so far as the extent of endemic and general diseases was concerned. Of the chief endemic disease, malaria, no special outbreaks, or any of undue severity of type, had to be recorded. This may have been, in part, due to the drought of the previous year, which, for some reason, coincided with good living conditions. An outbreak of whooping-cough, affecting a large proportion of the infant and adolescent population, and accompanied by a high mortality, occurred among the Barolong at Matsiloye, in August. The year showed an increase in the returns of diseases and treatments, as compared with previous years, owing to the continued extension of the medical service which now provides for all the accessible portions of the territory comprised within the principal magistracies. A special feature of this extension has been the establishment of dispensaries for the free treatment of venereal diseases, but the task of bringing these diseases within even measureable distance of control necessarily requires time and patience. The long distances, immemorial customs, ignorance, and superstition tend to retard the work and obscure its issues. The number of patients treated in Protectorate hospitals was 11 Europeans and 66 natives, whilst outdoor treatment was accorded to 10 Europeans and 600 natives—a total of 687, with 13 deaths. The total rainfall in the year ended March 31st, 1922, was 17·100 inches, as against 24·785 inches in the preceding year. The monthly average maximum temperatures at the various magistracies ranged from 72·39° (July) to 93·25° (January) and the minimum 36·66° (July) to 65·59° (January). The Protectorate lies, roughly, between 2000 and 5000 feet above sea-level, and only a few people live at the cooler altitudes of from 4000 to 5000 feet. The portion of the country inhabited by the greater number of both Europeans and natives is adjacent to the only line of railway, which passes through the eastern side of the Protectorate for a distance of 403 miles; the average altitude of the stations and sidings along this section of line is 3418 feet.

PROHIBITION OF WHITE LEAD IN BELGIUM.

A BILL is being prepared by the Belgian Ministry of Labour which will prohibit the sale of white lead under certain conditions, determined in accordance with the conclusions reached at the Third International Labour Conference of the League of Nations. The draft convention adopted at this conference prohibited the use of white lead and sulphate of lead in the internal painting of buildings, with certain exceptions, six years from the date of the closure of the conference. The Municipal Council of Liège has adopted resolutions prohibiting the use of white lead in inside and outside painting work done for the municipality.

FOOD EDUCATION SOCIETY.

WE have received from Viscountess Rhondda an appeal for contributions to enable the Food Education Society, formerly known as the National Food Reform Association, to carry on its educational work in the interest of better diet and hygiene. Owing to shortage of funds there is a real danger that its beneficent activities may have to case. During 1922, over a hundred lectures and demonstrations were given by Miss Florence Petty, who starts the year with some 80 engagements; the continuous sale of literature at meetings, exhibitions, and through the post testifies to the widespread appreciation of the society's efforts. The scheme for helping schools, hospitals, and other institutions by means of periodic visits from cookery and house-keeping experts finds increasing acceptance. Contributions, in the form of subscriptions or donations, may be sent to Mr. Charles E. Hecht, Hon.Secretary, at the office of the society, 329, Vauxhall Bridge-road, London, S.W. 1.

Bandaging Diagrams.—A folder-card drawn up by Mr. J. M. Carvell, M.R.C.S., and published by Messrs. John Bale, Sons, and Danielsson (price 2*d.*), recounts the principles of bandaging and gives some seventy diagrams of bandages applied. It is just the thing to recall to the first-aid student as he travels by 'bus or train the instruction he has been given in his class.